This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

**Usage guidelines**

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

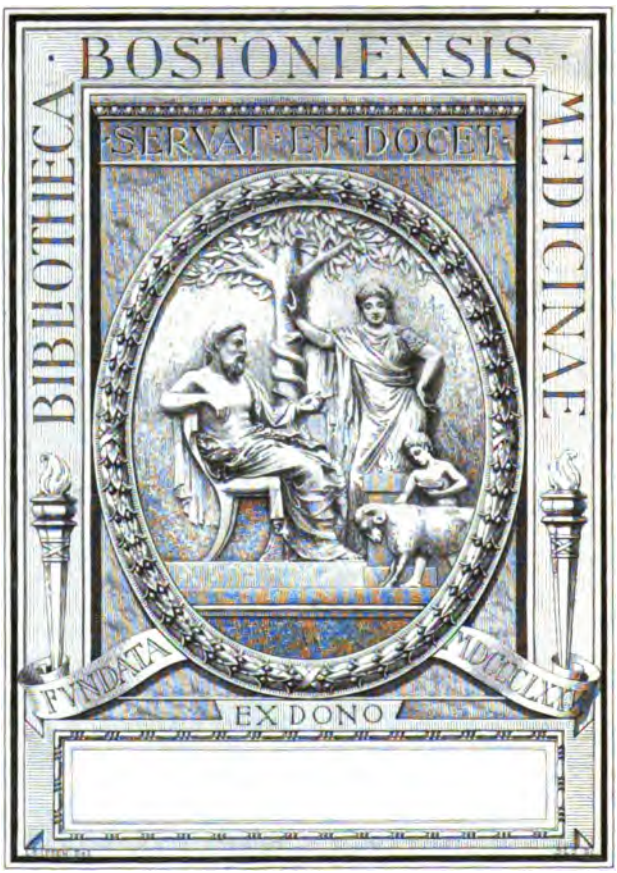
+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

**About Google Book Search**

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`


BIBLIOTHECA · BOSTONIENSIS · MEDICINAE
SERVAT · ET · DOCET
FVNDATA
EX DONO

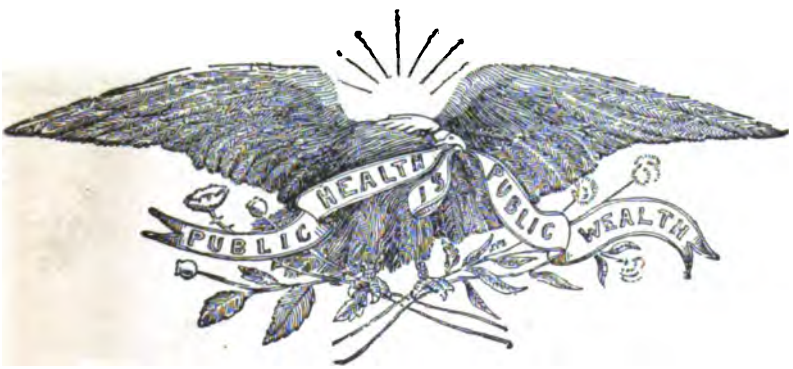
THE

# SANITARIAN.

## A MONTHLY MAGAZINE

DEVOTED TO THE

PRESERVATION OF HEALTH, MENTAL AND PHYSICAL CULTURE.




VOLUME LII., JANUARY TO JUNE, 1904.

A. N. BELL, A.M., M.D., Editor.

T. P. CORBALLY, A.M., M.D., HARRY KENT BELL, M.D., } Associate Editors.

---

BROOKLYN-NEW YORK, N. Y.: A. N. BELL.

1904.

BOSTON MEDICAL
MAR 21 1905
LIBRARY.

Entered according to Act of Congress, A. D. 1904, by A. N. BELL, in the office of the Librarian of Congress, at Washington.

CATALOGUED
MAR 21 1905
E. H. B.

A. M. Bell M.D.
In his 87th year

MEDICAL
MAR 211905
LIBRARY.
8591

# THE SANITARIAN.

## JANUARY, 1904.

NUMBER 410.

## OUR HOMES AND OURSELVES.

By A. N. BELL, A.M., M.D.

In the history of the effort to civilize the American Indians, it is recorded of an Indian agent in the Northwest, many years ago, that he built a number of farmhouses for the Indians in his jurisdiction which he persuaded some of them to occupy. Not long thereafter he had occasion to leave his post for a season, but with much self-gratification for the progress he had made in civilizing his wards. On returning to his charge, after a protracted absence of a little less than two years, he was greatly astonished at finding the dwelling houses he had built for them in use as storehouses only for their farming implements, and the Indians again in their well-aerated wigwams round about. On inquiry for the reason they informed him that all who slept in the houses were made sick, and some of them had spit blood; on removing to their wigwams they had regained their health and wanted nothing more to do with the white man's houses.

The Indian agent's effort to house the Indians is a good illustration of the continued but fruitless effort of cultured people generally, in all ages, to establish a correlation of the antagonizing forces of impure air and the maintenance of health. Insomuch that, as between our homes and ourselves, it is difficult to determine which is the more esteemed. Perhaps the proposition should be our homes *or* ourselves—it would be easier to show how prone people are to sacrifice their health to the economy of air space and sunlight.

No one can be thoroughly well and able to maintain resistance to disease without a plenary supply of fresh air and sunshine. For these agents there is no substitute. For various conditions the necessary areas of air space for occupation are variable. But evidently from common knowledge of the facility with which the air in confined places is deteriorated by breathing and of the difficulty

of renewing it, as taught in the schoolbooks, *no* room of less than 1,000 cubic feet occupied by one person only, can be effectively ventilated in cold weather—allowing for temporary suspension of ventilation in times of necessity—without danger to health. (Hospitals, barracks, prisons, workshops, assembly halls, etc., require from three to five times as much.) Large rooms, however, possess an advantage over smaller in that the change of air is effected with less perceptible motion, that is—with less draught. For example the admission of 3,000 cubic feet of air per hour into a room of 1,000 cubic feet involves a complete change of air in twenty minutes, but in a room of 10,000 cubic feet only once in 200 minutes, or for four occupants every five and every fifty minutes, respectively. The former would be very distinctly felt, and the latter would be scarcely perceived.

For these reasons it is evidently more difficult to provide for the efficient ventilation of a small room than for a large one, the air-space per head being the same in each case.

The bane of those who tolerate confined air is a *draught.* It is chiefly dangerous, like exposure to the ordinary vicissitudes of weather, to those who have had their power of resistance impaired by confinement, and particularly to the occupants of small bedrooms, because such persons, on account of the otherwise *still* air which they conserve, are much more sensitive to air currents. And herein lies one of the most troublesome problems the medical practitioner is called upon to solve, how to effectually warm and ventilate a small bedroom for the "lying-in" woman without draught.

Small bedrooms—that is to say those which afford less than 1,200 cubic feet to the occupant, particularly if used as lying-in chambers—should wholly rely upon the bed and clothing for warmth, unless, perhaps, heat can be admitted from an adjoining room. Ventilation without draught, in such circumstances, is no more difficult than for larger rooms. Rooms of less than 1,200 cubic feet capacity cannot be effectually warmed and ventilated in cold weather without thorough air flushing; and this can rarely be effected while they are occupied. Hence such rooms should be occupied by healthy persons as sleeping rooms only; never occupied as lying-in rooms or used by other invalids who cannot vacate them daily for thorough aeration.

Doubtless disease is often the result of draught—that is to say—of the passage of a current of cold air sharply across or against a portion of the body that is exposed to it; but the danger of this

is greatly enhanced by too close confinement. Persons who habitually expose themselves to an abundance of fresh air rarely suffer from such causes. Some there are, however, on account of apparently inexplicable reasons, who are supersensitive to such conditions. But these, above all other persons, find their best protection in habituating themselves to a plenary supply of fresh air under all circumstances; by woolen clothing and by particularly avoiding small bedrooms and all such conditions as are engendered by them.

Specially sensitive persons frequently suffer from the radiation of the heat from their bodies by too close proximity to windows, though these be perfectly tight; by resting their arms on marble-top tables; or by sitting or lying too close to the wall. The abstraction of heat from the exposed surface of the body, by these means is similar to draught, and liable to the same results.

People generally rely altogether too much upon the house to exclude cold air, instead of warm clothing, by which they exclude fresh air. By habituating themselves to close rooms and impure air they create and increase their liability to disease which they exert themselves in the wrong direction to avoid.

Bedrooms should always be constructed or chosen with reference to the probability of their becoming sick rooms. Hence the size of the room, the size and place of the windows and doors with reference to light and air should be arranged accordingly. In houses of the villa type it is almost impossible to avoid placing the bed either facing the window or between it and the door; in which case the former alternative should be preferred, because the inconvenience can be modified by shades or blinds. A projecting window is always a useful addition to a bedroom, providing room for the dressing-table and increasing the amount of floor space. Recesses or closets always should be constructed, if possible, to take the place of wardrobes, but never in dark corners; and the ventilation of such wardrobes and closets should be accomplished by ornamental borings in the panels of the doors, by transoms, or by doors shorter by two inches at the top and bottom than the door space. Wearing apparel requires constant ventilation to be healthful. Movable wardrobes and all bureaus or other furniture not otherwise easily handled should, like the bedstead, rest on castors.

All bedrooms should be so planned, if practicable, when space is abundant that, in case of sickness, they can be isolated from the rest of the house, so that communication may be had with them with the least possible risk to the sick, or to the well from the

sick. Moreover, whenever practicable, bedrooms should be provided with dressing-rooms apart, two to each family bedroom, which can be entered without passing through the bedroom. The wash-basin and bath-tub, and the water-closet, should be placed apart in properly arranged recesses connected with the dressing-rooms instead of the bedrooms.

*Servants Rooms.*—The kind of bedrooms provided by the rich for their servants, indeed, in the construction of dwellings generally, and particularly in the modern "flats," is a disgrace to civilization. Their beds are usually placed in the low corners of attics and other out-of-the-way places, where the air space and the means of ventilation are alike grossly inadequate. That those who occupy them quickly break down and form a large quota of the mortality from consumption is not surprising to any competent observer of the conditions promotive of that disease.

Among the tenement-house population proper—that is to say, the class of tenement-houses over which the health authorities in our large cities exercise authority—the conditions are better; and this circumstance is suggestive of the query to health authorities: Are not *all* dwelling-houses occupied by three or more families tenement houses? Are flats privileged consumption incubators? It would be an easy matter for almost any busy physician in our large cities to sum up a dozen or so of black holes on his diary, which in the aggregate surpass the famous Black Hole of Calcutta.

With regard to infants, and their beds in particular, warmth, next to the purity of the atmosphere, is of essential importance. Proportionately to its internal organism the body of the infant is more than twice as great in its degree of exposure as that of an adult, and its feebleness for several months is such as to require sleep for almost the whole of its time when not nursing. Its bed should be soft and the covering light and warm. It should at the first, and for at least a week after birth, be placed upon its side, well over on its stomach, with its mouth and nose free, lest it strangle with the trickling of the saliva into the windpipe. After a time, when it has gained sufficient strength and knowledge to use its limbs, for increased comfort, it may be placed upon its back, or at its own inclination. But in placing it in bed with its mother, which is generally best, care should be always taken to so place it that it is not likely to work its way down and get its face under the bed-clothes, where it would inhale the effluvium from the body of its mother.

Cradles and cribs are not only of great convenience, due care being observed with regard to the softness and warmth of the bed and covering, but advantageous for so placing the occupant as to secure the best access to fresh air and warmth, without overheating, which should be guarded against by light wool covering.

Baby-wagons require at least the same care with regard to bed and covering, and, besides, special care in cold weather, to prevent the abstraction of heat from the body by cold pavements. To prevent this it is well to have an extra underbed; and, for the same reason, those baby-wagons are best which have high wheels.

Darkness in bedrooms is the common concomitant of dirt; and though frequently induced for ostensibly good reasons, there is no gainsaying the fact that it generally serves to conceal worse conditions than those which it portends to prevent. If a room is generally dark it is scarcely less generally dirty; and if it be but moderately well-lighted on the whole, and yet has corners and recesses into which the light does not penetrate, those corners and recesses will usually be dirty corners and recesses. Fluff and dirt, comprising in part particles of organic matter from the lungs and skin, collect in them; and the scope of the broom and dust-brush of the ordinary housemaid is too well known to describe a curve commensurate with the light, to expect anything more than an aggravation of the danger of such dirt, by merely stirring it up and increasing its liability to be inhaled or to settle in the food and drink. That household dirt generally, and of dark bedrooms in particular, is a frequent cause of such common illnesses as catarrh, sore throat, inflamed eyes and bronchitis, and sometimes of graver diseases, is beyond question by any physician who comprehends the causes of the diseases he is called upon to treat as the most important step toward their cure and subsequent prevention.

Sunlight is, indeed, the right arm of oxygen. There ought not to be a dark room in any human habitation. To have too much sunlight for health is not possible. Its excessive intensity in exceptional circumstances can always be moderated, as occasion may require, but its plenary supply should be always provided for. Of artificial light generally, it may be said that in all its forms, except that of electricity, inasmuch as it is produced by the combustion of some compound of hydrogen and carbon, previously volatilized or brought into a gaseous condition, it is

more or less injurious to the atmosphere, by consuming the oxygen and emitting mephitic gases.

*Carburetted Hydrogen* and *Carbon Monoxide* are two particularly dangerous gases evolved by gas lights, above all, by the use of "water gas." This gas of itself is of non-luminous flame, but it is made luminous for lighting purposes by a process called "carburetizing," by which vaporized oil is added to the gas. It has a strong odor, like that of coal gas; but it is sometimes "odorized" by the admixture of some stronger smelling and deceptive substance without any amelioration of its dangerous properties. It usually contains from 30 to 50 per cent. of *carbon monoxide*, by which it poisons all who breathe it; and so much of this poison is evolved and mixes in the air of rooms lighted with water-gas as to render all persons who occupy such rooms liable to it.

On account of the recognized danger of its use, in 1899 a commission appointed for investigation, in England, reported adversely on all illuminating gas containing over 20 per cent. of carbon monoxide, which proportion corresponds approximately to a mixture of equal volumes of coal-gas and water-gas.

The increased danger from the use of water-gas, as compared with coal-gas, is shown by statistics on the subject, by the Boston Board of Health:

In 1888 when but 1 per cent. of the gas sold in Boston for illuminating purposes was water-gas there were no deaths, suicidal or accidental, from gas poisoning. In the following year there was but 1. In 1890 the percentage from water-gas rose to eight, and there were six deaths, four accidental and two suicidal. In 1892, as a result of permissive legislation, 52 per cent. of the gas sold was water-gas, and the deaths rose to 15. In 1897, the percentage rose to 93 and the deaths to 47, 32 of which were accidental, and 15 suicidal. In the five years ending September 1, 1899, 169 deaths had occurred.

The symptoms of poisoning from carbon monoxide, as given off from water-gas illumination, are the same as those for carbon dioxide, with which intelligent persons generally are familiar.

For illuminating and heating purposes the use of water-gas undiluted should be wholly prohibited; and, when diluted, as required in England, it is still fraught with danger.

Coal-gas, candles and lamps, all means of artificial lighting, except the electric light, evolve impurities to the air and consume

oxygen, insomuch that allowance of space and ventilation should be always made for them. The impurities, however, do not bear any proportion to the intensity of the light produced: indeed, as a rule, the better the light the less the deterioration of the air. For equal amounts of light, candles and oil consume more oxygen than gas, flat wicks more than round ones, and batswing gas-burners more than argands. Each cubic foot burnt gives off at least 2 cubic feet of carbon dioxide and from 2 to 5 grains of sulphur dioxide.

Every cubic foot of coal-gas burnt requires for the effectual dilution of the products of such combustion 1,800 cubic feet of fresh air, for each cubic foot of burning gas evolves 2 cubic feet of carbon dioxide, and 2 to 5 grains of sulphur dioxide. A common batswing burner consumes 3 or 4 cubic feet of gas per hour, and therefore requires from 5,000 to 7,000 cubic feet of air hourly. In other words, such a gas-burner, in its consumption of oxygen and general deterioration of the air of a room, is equal to two full-grown men. Nevertheless, for equal quantities of light, the amount of carbon dioxide given off and oxygen consumed, is less than with candles or lamps. But gas always gives off sulphur, chiefly in the form of carbon bisulphide, which acts injuriously on pictures, bookbindings and delicate colors of fabrics, but it is at least doubtful whether this substance in such small quantities is injurious to health.

Gas-burners so contrived as to mix a large proportion of air before the burner is reached, as first contrived by Bunsen, and as more recently modified by Welsbach, ensures complete combustion of the carbon dioxide and greatly intensifies the light. These lights possess a threefold advantage: less consumption of gas, less deterioration of the air and more light. Lamps, too, are made on the same principle for burning kerosene oil. Objection is urged by some persons to these bright lights as being too trying to the eyes. And so is the sun of a bright day, if directly faced without a shade. The night lights should be so placed or shaded as to divert or soften the rays and diffuse the light. They require care with special reference to the pressure of the gas, lest it be too strong, or the orifices become choked up, when soot is deposited in the meshes of the mantle, when carbon monoxide may be formed, and a product of the imperfect combustion of the hydrocarbons, *acetylene*, given off. This is a very poisonous compound of carbon and hydrogen ($C_2 H_2$) of a strong, disagreeable odor, quite distinct from raw coal-gas. Moreover, *acety-*

*lene* gas is the gas which renders gas-stoves particularly objectionable. When the orifices become choked up with soot, as they are constantly liable to, there is less heat and an unpleasant odor. The bare statement suggests the remedy—cleanliness. Much exposure to this gas causes dizziness, nausea and syncope.

*The Bath.*—Everybody, to be clean, requires the bath—infants and children particularly, because of their greater functional activity; working people most of all, because they sweat most, and are, in default of the bath, the dirtiest of all people, but with it, the cleanest, because perspiration is promoted by exercise, and the scarf-skin is thereby more effectually disposed of; the skin is consequently cleaner and softer. Indeed, it may be truthfully said that persons who never sweat and bathe are never clean; and lazy people are sometimes detectable by the odor emitted from their bodies.

Thus it is observed that the skin, instead of being the mere organ of touch with external things, is, in reality, an exceedingly complex and elaborate organ richly supplied with nerves, blood vessels, lymphatic vessels, and an exquisite drainage system, upon which the health of the body, in all its parts, greatly depends.

Of the nature of sweat, everybody is more or less acquainted, but comparatively few persons appear to appreciate its purpose: to regulate the temperature of the body, which, for the maintenance of health, is confined to narrow limits. A secondary effect of sweating is to remove the scarf-skin—the particles of dead cutis which are prone to stick to the surface of the unwashed. It is most commonly observed on the scalp, where it very properly takes the significant name of dandruff, a word derived from two Anglo-Saxon words—*tan drof*—which signify *itch* and *dirt*. It is preventable by pure soap and water.

The scarf-skin, in invisible particles, as well as in scales, is particularly abundant after fevers, and especially dangerous after those of an exanthematous character, such as measles, scarlet fever, and smallpox. The warm bath and pearline, or other pure soap, should be used daily during the period of desquamation.

The daily quantity of sweat in an adult, at moderate temperature, has been computed at three pounds; but it is so dependent upon the degree of exercise as to be exceedingly variable. It is always in process, however, in healthy persons, and but rarely suspended in sick persons. Insomuch that persons who do not use the bath—those who habitually allow their skins to be continually smeared with the dirty paste that results from an accu-

mulation of putrefying scarf-skin, grease and sweat—constantly stink.

It would extend this paper to inordinate length to consider the great varieties of the bath and their indications with any degree of detail, for which reference may be made to the "Bath" in previous volumes. It must suffice, at this time, to mention the chief of them, and but briefly. The tepid, warm and hot baths are indicated by temperatures respectively 85° to 92°, 92° to 98°, and 98° to 112° Fahr. The cool bath has a temperature from 60° to 75°, and the cold bath from 60° downward to the freezing point, Fahr.

The ordinary domestic bath—the bath-tub—which has become a practical necessity to all cleanly people who can afford it, and common to domiciles and hotels, is chiefly defective because of the abominable although almost universal practice of placing it in the same room with the water-closet. Any one who indulges in the luxury of the morning cold bath, the deep and invigorating respiration which it incites and the energetic friction which it prompts, soon acquires repugnance to all sources of impurity in the air of the bath-room. Pure air, and plenty of it, are conditions no less essential than an abundance of pure water. Hotels which do not provide an abundance of both pure water and pure air, and bathing facilities, *ad libitum*, are unworthy of patronage; and "health" resorts without the bath are a misnomer.

The vapor bath is a favorite method of using warmth and moisture, and on account of its effect in preventing evaporation from the surface, is a powerful agent for increasing bodily temperature. It can be borne at a much higher temperature than the water bath—from 120° to 150° Fahr. By preventing the evaporation of the natural moisture from the skin, and adding steam thereto, apparent profuse perspiration is the common and speedy result; but this is sometimes deceptive. In some states of the system, when excessive perspiration is not easily excited, the condensation of the vapor on the skin is liable to be mistaken for it, and when this occurs the increased temperature of the body that results from such exposure is fraught with danger.

The Turkish bath consists in a succession of hot-air processes, varying in temperature from 120° to upward of 200° Fahr., subsequent shampooing, and spray douche. With regard to its value the writer's personal observation justifies the remark that it is apt to be overdone. Like the vapor bath, its object is profuse perspiration. Well persons are never benefited, and are some-

times injured by subjecting themselves to the highest temperature common to the Turkish bath; and sick persons rarely or never need it.

Packing with the wet sheet, cold and hot, carries its description with the mention. By its means the stimulating action of the water is reduced to a minimum, and the refrigerating action only is the result. But with regard to the distinction which is insisted upon by some medical practitioners and writers upon the subject, it makes little or no difference whether the sheet used be wet with cold water or hot, since the temperature of the skin and the sheet rapidly approximate, and the more rapid evaporation of the hot water speedily induces a degree of cold quite equal to that of the cold sheet, so that the choice might well be left to the fancy of the subject; the result is the same.

Sulphur baths, or rather sulphur-vapor baths, probably have no effect beyond that which would result from the vapor without the sulphur, whether applied as sulphur fumes or sulphuretted gases.

Mud baths are a nasty means of obtaining the results of a protracted warm bath—rarely indicated, and of doubtful benefit.

Galvanic and electro-magnetic baths are deceptions. Whatever benefit is derived from their use is due to the magnetic and electric currents, if applied, wholly independent of the bath; it adds nothing to the potency.

The douche, by which is meant a column of cold water poured from a height, was at one time thought to be particularly adapted to the treatment of violent lunatics, probably because they are incapable of describing its severity. Its use is a torture, more or less dangerous, and should be prohibited.

The shower bath differs from the douche by the division of the stream of water falling upon the head and shoulders; and the needle bath differs from the shower by its general application to the whole surface of the body by means of a perforated coil of pipe, within which the bather stands.

The rain bath is simply a variety of the needle bath, the shower being from the top only, but inclined. It is the people's bath *par excellence*. A boon to the working people, who have an abundance of exercise and particular need of the bath for cleanliness.

These baths are simply arranged, built in the most economical yet substantial manner, and divided into spaces just large enough for an adult to stand and move comfortably in. The bather

soaps himself, and turns on the cold or warm water, which falls upon him as a spray-douche; the mechanical action of which spray-douche, aided by his own efforts, rapidly cleanses the body, and the water flows away over the latticed door into a receptacle which conveys it to the drain-pipes. The time, consumption of water, and attendance are thus reduced to a minimum; cleanliness of the bathing-room is rapidly obtained, and the danger of contagion, which would deter many from resorting to the tub-baths, is entirely obviated.

## MILK.

### REPORT UPON THE RESULTS WITH DIFFERENT KINDS OF PURE AND IMPURE MILK IN INFANT FEEDING IN TENEMENT HOUSES AND INSTITUTIONS OF NEW YORK CITY: A CLINICAL AND BACTERIOLOGICAL STUDY.*

By WM. H. PARK, M.D., and L. EMMETT HOLT, M.D., of N. Y.

[*From the Rockefeller Institute for Medical Research and the Research Laboratory of the Department of Health, New York City.*]

The work, of which the following is a report, is a part of an investigation into the production, transportation and feeding of cow's milk in New York City, which was undertaken in the summer of 1901, and which was extended over two years. The entire investigation contemplated an inquiry into the condition of farms such as were supplying milk to New York, the transportation of milk, its condition on delivery and its effect upon the children in tenement houses and institutions.

Observations upon the results of feeding cow's milk to healthy infants in tenement houses were determined upon, since in this way it was believed we could best study the problem under the conditions actually existing, and also avoid those influences met with in institutions which in themselves are so deleterious to infants. For comparison, however, a number of institutions were carefully studied during the summer of 1901.

The purpose of this investigation was to gather some facts upon the following points: (1) To make a comparison of the

*Read before the Association of American Physicians, Washington, D. C., May 12, 1903.—Medical News, December 5, 1903.

results of infant feeding in tenements in winter and summer; (2) to determine how far such results were affected by the character of the milk used, especially its original bacterial content, its preparation, and whether it was fed after heating or raw; (3) to see to what extent results were modified by other factors, such as the care the infants received and the surroundings in which they lived.

The clinical observations contained in this report were made by the following persons who were employed by the Rockefeller Institute: Drs. Eli Long, Mary E. Goodwin, Jane Berry, Alma Vedin, Mary Willets and Marie Grund. During the first season, J. S. Mabey was employed by the Institute, but during the second by Mr. Straus. There assisted in the work as volunteers, Drs. J. Sobel, Angenette Parry and Ford. Dr. Sobel reported for two seasons on a group of babies fed from the Good Samaritan Dispensary. To all of these workers the greatest credit is due for the thorough and conscientious way in which they did their work. They were most earnest and painstaking in obtaining as far as possible the facts desired, and much of the value of this report is due to their efforts. The bacteriological investigations were for the most part carried out in the Research Laboratory of the Health Department; but also, to a considerable extent, in the Carnegie Laboratory of the New York University. Drs. Letchworth Smith, Mary E. Goodwin, Katherine R. Collins and Rose A. Bebb carried out this portion of the work.

Observations were made during the summer of 1901, the winter of 1901-2, and the summer of 1902; during each of these seasons the different groups of infants were followed for an average period of about ten weeks. A considerable number were unavoidably lost sight of owing to removal with failure to leave address, and various other causes; but all others who could be kept under observation are included in the report. Excluding all imperfect records and those cases that were observed too short a time to admit of any deductions, there remain 632, of which 98 were observed during the summer of 1901; 211 in the winter of 1901-2; 278 in the summer of 1902, and 45 in the summer of 1903. This special group of 45 is included although the observations were made after the general investigation had closed.

The plan of investigation was that each of the workers should have a group of children, never more than 50, under personal observation. So far as possible the children were kept under the same general conditions as before. The weights were taken with

great care by the physicians, at regular intervals in most cases. Nearly all of the infants were observed in their homes, to which regular visits were made twice a week for the entire period. One group of about 50 was observed by Dr. Sobel at the Good Samaritan Dispensary to which mothers came daily for the milk for their infants. When necessary one of his assistants went to their homes. In all cases advice was given in regard to matters of hygiene and the general care of the children. It was customary to stop the milk temporarily, whenever acute disturbances of digestion existed.

*Bacteriological Investigation of the Milk Used in Feeding.*— The clinical work was carried on in conjunction with a bacteriological study of the milk used, in order to determine whether any relationship existed between the number and character of the micro-organisms in milk, and the amount of diarrheal disease in the children to whom it was fed. Bacterial counts were made once or twice a week from the milk as given to each child. Specimens being taken at times from the raw and at times from the heated milk.

The bacteria were isolated from the milk through plating in a 2 per cent. lactose-litmus-nutrient-gelatin, or agar, and later grown upon the usual identification media. The pathogenic properties of the different bacteria were tested by intraperitoneal and subcutaneous inoculation in guinea pigs with 2 c.c. of a 48-hour broth culture, and by feeding young kittens for several days with 3 to 6 c.c. daily of a 24-hour broth culture by means of a medicine dropper.

With the characteristics of the bacteria thus determined, they were then separated into classes following as nearly as possible the lines suggested in Chester's Manual of Determinative Bacteriology. Further attempt was then made to identify as many as possible of the varieties with those previously described, using the descriptions of Chester and Migula. With a great many this proved unsatisfactory or impossible because of the incomplete descriptions in literature, or the lack of all description.

The varieties isolated represent only the species presenting greatest number in the milk examined, for in no case was more than 0.01 c.c. of a milk, and in most highly contaminated milks, only 0.001 c.c. used in making a plate, and varieties which occurred in too small numbers to be present in this quantity would necessarily be missed. For the purposes of this article it is not considered desirable to burden the reader with the enumeration

of the varieties of bacteria found in the different samples of milk and their characteristics. Only a brief summary of the results will be given.

From the milks altogether 239 varieties of bacteria were isolated and studied. These 239 varieties, having some cultural or other differences, were divided into the 31 classes, each class containing from 1 to 39 more or less closely related organisms.

As to the sources of bacteria found in milk, we made sufficient experiments to satisfy us that they came chiefly from outside the udder and milk ducts.

Bacteria were isolated from various materials which under certain conditions might be sources of contamination for the milk, and the cultures compared with those taken from milk. Thus there were obtained from 20 specimens of hay and grass, 31 varieties of bacteria; from 15 specimens of fæces, manure and intestinal contents, 28 varieties; from 10 specimens of feed, 17 varieties. Of these 76 varieties there were 26 which resembled closely those from milk, viz., 11 from grass or hay; 26 from manure; 5 from feed.

During the investigation a number of the varieties isolated from milk were shown to be identical with types commonly found in water.

From the few facts quoted above and from many other observations made during the course of the work, it would seem that the term "milk bacteria" assumes a condition which does not exist in fact. The expression would seem to indicate that a few varieties, especially those derived in some way from the cow, are commonly found in milk, which forms having entered the milk while still in the udder, or after its withdrawal, are so well fitted to develop in milk that they overgrow all other varieties.

As a matter of fact, it was found that milk taken from a number of cows, in which almost no outside contamination had occurred, and plated immediately, contained, as a rule, very few bacteria, and these were streptococci, staphylococci and other varieties of bacteria not often found in milk sold in New York City; the temperature at which milk is kept being less suitable for them than for the bacteria which fall into the milk from dust, manure, etc. A number of specimens of fairly fresh milk averaging 200,000 bacteria per c.c. were examined immediately, and again after twelve to twenty-four hours. In almost every test the three or four predominant varieties of the fresher milk remained as the predominant varieties after the period mentioned.

The above experiments seem to show that organisms which have gained a good percentage in the ordinary commercial milk at time of sale will be likely to hold the same relative place for as long a period as milk is ordinarily kept. After the bacteria pass the 10 or 20 million mark, a change occurs, since the increasing acidity inhibits the growth of some forms before it does that of others. Thus some varieties of the lactic acid bacteria can increase until the acidity is twice as great as that which inhibits the growth of streptococci. Before milk reaches the curdling point, the bacteria have usually reached over a billion to each c.c. For the most part specimens of milk from different localities showed a difference in the character of the bacteria present, in the same way that the bacteria from hay, feed, etc., varied. Even the intestinal contents of cows, the bacteriology of which might be expected to show common characteristics, contained beside the predominating colon types, other organisms which differed widely in different species and in different localities. Cleanliness in handling the milk and the temperature at which it had been kept were also found to have had a marked influence on the predominant varieties of bacteria present.

*Pathogenic Properties of the Bacteria Isolated.*—Intraperitoneal injection of 2 c.c. of broth or milk cultures of about 40 per cent. of the varieties tested, caused death. Cultures of most of the remainder produced no apparent deleterious effects even when injected in larger amounts. The filtrates of broth cultures of a number of varieties were tested, but only one was obtained in which poisonous products were abundantly present. Death in guinea pigs weighing 300 grams followed within fifteen minutes after an injection of 2 c.c.; 1 c.c. had little effect.

As bacteria in milk are swallowed and not injected under the skin, it seemed wise to test the effect of feeding them to very young animals. We therefore fed 48-hour cultures of 139 varieties of bacteria to kittens of two to ten days of age, by means of a glass tube. The kittens received 5 to 10 c.c. daily for from 3 to 7 days. Only one culture produced illness or death. A full report on the identification of the varieties of bacteria met with in this investigation can be found in an article by Dr. Smith in the 1902 Annual Report of the Department of Health.

After two years of effort to discover some relation between special varieties of bacteria found in city milk and the health of children, the conclusion has been reached that neither through

animal tests nor the isolation from the milk of sick infants have we been able to establish such a relation. Pasteurized or "sterilized" milk is rarely kept in New York longer than 36 hours, so that varieties of bacteria which after long standing develop in such milk did not enter into our problem. The harmlessness of cultures given to healthy young kittens does not of course prove that they would be equally harmless in infants. Even if harmless in robust infants, they might be injurious when summer heat and previous disease had lowered the resistance and the digestive power of the subjects.

This failure to discover definite pathogenic bacteria, as well as the numerous varieties of bacteria met with, have forced us to rely on the clinical observation of infants fed on raw and Pasteurized milk from the same source, and upon different milks of unknown origin varying in the number of bacteria contained. In the following pages, observations upon food are combined with those upon other factors which influenced the health of the infants.

*Selection of the Children for Observation.*—The original aim was to include only infants who were entirely bottle-fed, but it was found that the great majority of all infants in the tenements receive during the first six months occasional breast feedings at night, and nearly all are given some solid food after they are six months old, or as soon as they are able to hold it in their hands. The purpose of the investigation being to obtain relative results with different forms of milk and not absolute results with one form, it is believed that the conclusions reached are not affected by the fact that many of the infants received breast feeding at night. Indeed, including such infants has the advantage of studying representatives of a very large class. In each season some infants who were entirely breast-fed were observed for purposes of comparison.

In selecting the children the only conditions made were that they should not be ill or suffering from marasmus when observations were begun, and that they should be of suitable age. Of the entire number 340 were six months old or under, 265 were from seven to twelve months; 47 were a little over twelve months. With the exceptions stated, every child available was included by the physicians until the proper number was made up. The district in which most of the children lived was the lower east side of New York, as densely populated as any part of Manhattan Island.

An unexpected difficulty was encountered in beginning the investigation in the scarcity of bottle-fed infants in the region where the families were selected. One of the physicians reported that in a densely populated neighborhood where every street was swarming with children, hardly half a dozen bottle-fed infants could be found on a block. While this may not have been true of the entire district, it was the observation of all the workers that the proportion of bottle-fed infants in tenement houses was surprisingly small. This is a very different impression from what one gains from visiting dispensaries where great numbers of bottle-fed infants are seen. But the dispensaries draw patients from very large districts and gather the cases that are not doing well, so that the aggregate seems very large. This excess in proportion of the bottle-fed infants at the dispensaries over that in the houses is in itself striking testimony to the advantages of breast feeding.

*The Character of the Food Employed.*—It was at first intended to make no change in the food the child was receiving, but it was found necessary in order that observations might also be made upon the comparative effects of heated and unheated milk in summer to place a number of infants upon a modified raw milk supply distributed to others after Pasteurization. This was rendered all the more necessary since it was discovered that during the summer the sterilization of milk in some form was almost universally practiced in the tenements of New York. In the summer of 1902 especially, it was rare to find an infant upon raw milk; an incidental testimony to the value of the praiseworthy efforts of the Health Department, and the agitation in the public press in favor of clean milk and the necessity for sterilization in hot weather. When gastro-intestinal disturbance of any severity developed, the infants were deprived of milk for a day or two and put on barley water or other suitable food.

In the district where the observations were made the following forms of milk were extensively used: (1) Condensed milk; (2) milk purchased at small stores with groceries and other provisions and known as "store milk"; (3) bottled milk; (4) milk from central distributing stations, chiefly from the Straus milk depots and Good Samaritan Dispensary.

Condensed Milk.—That used was usually bought in cans, *i. e.*, the sweetened variety; seldom were the best brands purchased. It was generally prepared at each feeding by adding hot water which, in most cases, had been boiled.

Store Milk.—This is the poorest grade of milk sold in New York, but varies at the different stores. It is kept in large cans in the small stores and is sold to customers at an average price of four cents a quart. It averages about 3.75 per cent. of fat. It is customary for milk to be purchased twice a day and it is carried home and kept in pails or pitchers. In summer it is usually heated at once; if it curdles, it is considered to be unfit for use and is returned. During the hot days of the summer of 1901, it frequently happened that milk obtained from two or three consecutive stores would curdle. Heating is usually done in a saucepan and the temperature is raised to a point where the milk begins to "foam," seldom to a boiling point. In most cases it is kept upon ice. It is usually prepared for the infant at each time of feeding. The only modification practiced is, in most cases, dilution with water or barley water, equal parts being as a rule given when infants are about three months old and continued until ten or eleven months when whole milk is given. The bacteriological examination made of this milk during the summer of 1901 showed it to contain from 4.000,000 to 200,000,000 microorganisms, an average of about 20,000,000 per c.c. The form of heating employed killed, it was found, about 95 to 99 per cent. of the bacteria present. In the summer of 1902, owing partly to the cooler season, but chiefly to the new regulations of the Health Department regarding the care and sale of milk, the average was about 3,000,000 per c.c. During the winter the number of bacteria ranged from 100,000 to 5,000,000 bacteria per c.c., and averaged about 400,000 per c.c.

Bottled Milk.—The greater part of the bottled milk used in these tenements was handled by one of the largest dealers in the city. This milk was produced under conditions which were only fairly good. However, it was so well handled during transportation and delivery that it was nearly always in good condition when received by the consumer. This milk averaged about 500,000 bacteria per c.c. It was sold in covered jars at eight cents a quart. The same general plan of modification was practiced as with the store milk, and it was also in summer heated and usually in about the same way. As the people who purchased this were not so poor as those using store milk, they were more likely to use ice for keeping it.

Besides this bottled milk some special milk from the Walker-Gordon and Briarcliff Farms was furnished gratuitously to a limited number of cases for the sake of comparison, but this was

not widely enough used to admit of drawing conclusions sufficiently definite to be expressed in figures. This milk averaged about 10,000 bacteria per c.c.

Milk from Central Distributing Stations.—The greater part of this milk was supplied from the Straus Milk Depots of which there are a number scattered through the city, and from the diet kitchen of the Good Samaritan Dispensary, a small quantity from other diet kitchens. The milk used at these places was generally of excellent quality, usually from an "inspected" or "certified" farm, but it was mixed with poor cream. It was furnished gratis to those too poor to pay, and at a small charge, usually one cent a bottle, to others. This milk after the addition of cream averaged before Pasteurization nearly 2,000,000 bacteria per c.c.; after Pasteurization, about 500 per c.c.; after boiling, about 5 per c.c. It is supplied in small bottles, each one containing the quantity for a single feeding. The bottles are washed and sterilized at the central stations. The Straus milk was generally Pasteurized; that from the Good Samaritan Dispensary was boiled. With both some attempt at modification was made, three or four standard formulas being used. The common modification consisted in the dilution with boiled water, the addition of lime water, milk sugar, and, in some cases, cream also; or the dilution with barley water and the addition of cane sugar. Regarding the use of these formulas, the quantity for one feeding, and the number of feedings daily, directions were usually given by the physicians in attendance at the central stations. As the mothers came daily for their milk, some constant supervision of the cases was thus possible, and many minor disturbances of digestion no doubt controlled by a proper variation in the food.

Infant Foods.—It was a surprise that the proprietary foods were so little used in the tenements, the expense being apparently the chief reason. Although they were given to a number of children observed, they were seldom used for a long time, or as the sole diet, and certainly cut no figure in the results. We have therefore not classified these cases separately.

Breast Feeding.—As already stated, the great majority of infants reared in tenements are breast-fed, at least for the first six months. No effort was made to collect many observations upon these children, but a few were introduced for the sake of comparison. It was thought at first to make a separate division of the children who were partly breast-fed, as it was the impression of some of the physicians who followed the cases that a decided

difference existed between those who were partly nursed, usually at night, and those entirely fed. However, the general figures when tabulated did not show any very marked difference. The results seem to have depended rather upon the character of the other food.

In estimating the results obtained by the different methods of feeding two things were considered: first, the gain or loss in weight, and secondly, the amount of digestive disturbance, particularly diarrhea, which occurred in the different groups of infants. These cases have been divided according to results in four groups: (1) Those which did well. In this group are included the infants who made a substantial and generally a regular gain in weight during the period of observation, this usually amounting to from two to five pounds for the ten or twelve weeks, and those that had no diarrhea worth mentioning—usually both conditions existed together. (2) Those which did fairly, including those in which some diarrheal disturbance was present but not of a serious nor prolonged character, and in which the weight was either stationary or the gain very slight. Both these generally went together. (3) Those which did badly, including those in which considerable digestive disturbance, usually diarrhea, was present, or in which there was a loss in weight; generally here also both factors existed. (4) The fatal cases.

The following tables show in a condensed form the results obtained with the different foods employed in winter and in summer:

TABLE I. FOOD AND RESULTS.—WINTER.

| | Did well. | Did fairly. | Did badly. | Died. | Totals. |
|---|---|---|---|---|---|
| Store milk | 47 | 6 | 2 | 0 | 55 |
| Condensed milk | 39 | 5 | 2 | 2 | 48 |
| Good bottled milk | 51 | 13 | 1 | 3 | 68 |
| Milk from Central Distributing Stations | 35 | 20 | 4 | 0 | 59 |
| Best bottled milk | 5 | 0 | 1 | 0 | 6 |
| Breast feeding | 7 | 1 | 0 | 1 | 9 |
| Totals, excluding cases counted twice | 156 | 41 | 8 | 6 | 211 |

TABLE II. FOOD AND RESULTS.—SUMMER.

| | Did well. | Did fairly. | Did badly. | Died. | Totals. |
|---|---|---|---|---|---|
| Store milk | 21 | 23 | 20 | 15 | 79 |
| Condensed milk | 22 | 20 | 14 | 14 | 70 |
| Good bottled milk | 37 | 23 | 29 | 9 | 98 |
| Milk from Central Distributing Stations | 84 | 33 | 24 | 4 | 145 |
| Best bottled milk. | 9 | 3 | 0 | 0 | 12 |
| Breast feeding | 17 | 7 | 7 | 0 | 31 |
| Totals, excluding cases counted twice | 184 | 108 | 88 | 41 | 421 |

*Season and Results.*—Nothing could be more striking than the contrast between the results in winter and in summer. The general summary shows that of the 211 winter cases, 156 did well; 41 did fairly well, 8 did badly and 6 died. In other words, what might be considered good results were shown in 93 per cent. of the cases, and bad results in only 7 per cent. Furthermore, in only one of the six deaths was the cause connected with the digestive tract.

Of the 421 summer cases, 184 did well, 108 did fairly, 88 did badly and 41 died. In other words, goods results were obtained in 69 per cent. of the cases and bad results in 31 per cent., while in nearly all of the fatal cases death was due to diarrheal diseases. It should be remembered that all the children both winter and summer had the advantage of some continuous intelligent oversight, usually one visit a week and often two being made by the physicians. This supervision contributed in no small degree to the results in both groups of cases.

The difference in results in the summers of 1901 and 1902 was not great; the percentage of bad results in 1901 being 37; in 1902, 35. This may have been due to the slightly cooler season of 1902, or the better general quality of the city's milk. The proportion of children on the different varieties of milk varied somewhat in the two years, so that a strict comparison is difficult.

The showing made by the winter cases is most gratifying and was indeed a surprise to all. So large a percentage of good results by all methods of feeding, and apparently so little difference between them, was not expected. Artificial feeding in the tene-

ments in winter would seem to be comparatively a simple problem.

To what shall be ascribed the great difference between summer and winter results? There seem to be many factors, but a consideration of the facts accumulated indicate that heat is the primary factor, and bacteria and their products a secondary one, except when the contamination is extreme or pathogenic organisms are present.

The effect of continued heat upon the health of infants is shown in the number of cases of diarrheal diseases and the number of deaths during the months of the summer of 1901 in an institution in the country near New York City, where a fairly pure milk was fed raw. During the winter and spring there was almost no diarrhea; with the warm weather of June it increased, reaching its highest point in August. The comparative results with the breast and bottle-fed infants are also evident:

| Month. | No. of Infants. | Food. | Deaths. |
|---|---|---|---|
| June | 34 | Breast milk | 0 |
| | 25 | Cows' milk | 0 |
| | 38 | Breast and cows' milk | 0 |
| | 128* | Milk and barley food | 0 |
| Total.... | 225 | | |
| | Number of cases of diarrhea, 15; deaths, 0. | | |
| July | 32 | Breast milk | 0 |
| | 20 | Cows' milk | 3 |
| | 38 | Breast and cows' milk | 0 |
| | 124* | Milk and barley food | 0 |
| Total.... | 214 | | |
| | Cases of diarrhea, 38; total deaths, 3 (all bottle-fed). | | |
| August | 28 | Breast milk | 0 |
| | 18 | Cows' milk | 3 |
| | 32 | Breast and cows' milk | 4 |
| | 129* | Milk and barley food | 2 |
| Total.... | 207 | | |
| | Cases of diarrhea, 50; total deaths, 9. | | |

*Those on milk and barley food were all over twelve months old.

*Food and Results.*—(1) Store Milk.—The largest number of bad results were seen, as was expected, with the cheap store milk, where not only was the milk poorer, but the care at home less. The winter observations upon this milk included 55 cases in about half of which some method of partial sterilization was employed; in the remainder it was given raw. Of these 55 infants, 47 did well; 6 did fairly; only 2 did badly and none died. Combining those who did well and those who did fairly, we have what may be considered good results in 96 per cent. of the cases and bad results in only 4 per cent. There was little apparent difference in results between those taking raw and those taking heated milk.

Store milk was the food of 79 of the summer cases. Of these 21 did well; 23 did fairly; 20 did badly and 15 died; in other words, good results in 56 per cent. of the cases, and bad results in 44 per cent. In nearly all of these cases the milk was heated in some way before feeding; usually it was raised nearly to the boiling point. This had the effect, it was found, of killing about 99 per cent. of the micro-organisms present, but the milk still contained after such heating between 5,000 and 500,000 bacteria to the c.c. An interesting point of tolerance of such milk was noticed in many cases. A number of infants living in bad surroundings, yet who received fairly good care, took only cheap store milk and yet remained well throughout the entire summer. During 1901 some of the store milk was very bad, averaging on hot days over 100,000,000 bacteria per c.c.

(2) Condensed Milk.—There were 48 winter observations upon infants taking condensed milk; 39 children did well, 5 did fairly, 2 badly, and 2 died, *i. e.*, good results were seen in 92 per cent. and bad results in 8 per cent. of the cases.

There were 70 summer observations made upon infants taking condensed milk. Only 22 of these children did well, 20 did fairly, 14 badly, and 14 died; or 60 per cent. good results and 40 per cent. bad results.

The results with condensed milk can hardly be attributed to the bacteria, inasmuch as it was almost invariably prepared with boiled water and contained relatively a small number of micro-organisms before heating. These children were often apparently in good condition until attacked with acute disease, when they offered but little resistance and seemed to succumb more quickly than any other class of patients. In one family three healthy infants, triplets, five months old, were taken sick on the same day

with vomiting and diarrhea; one died within twenty-four hours, one within two days, and the third within a week. A bacteriological examination of the prepared milk remaining in one bottle showed nothing noteworthy.

(3) Bottled Milk.—The better results observed with bottled milk should not be put down as entirely due to the character of the food. The people who purchased it were seldom so poor as those buying store milk; they were usually more intelligent and probably more careful in handling the milk. Often they had ice.

There were 68 winter observations on children fed upon bottled milk; of these 51 did well, 13 fairly, only 1 did badly, and 3 died. None of these deaths were due to intestinal disease. In other words, there were good results in 94 per cent. of the cases, and bad results in 6 per cent.

There were 98 summer observations upon infants fed on bottled milk; of these 37 did well, 23 fairly, 29 did badly, and 9 died. In other words, 61 per cent. of good results and 39 per cent. bad results. In these quite a number received the milk raw, but as in the other observations, as soon as any illness occurred, some form of attempt at sterilization was almost invariably practiced.

It is interesting to compare these results with those seen with store milk just above them in the table. The percentage mortality with the better grade of milk is only about one-half that seen with either condensed or store milk, and yet the large number of infants who did badly brings the proportion of bad results with bottled milk almost up to that with the two preceding varieties. It was noteworthy, however, that among infants included as doing badly there was on the average less sickness than among those fed on store milk. It would seem therefore that good bottled milk as now used, while much less dangerous to life than cheap store milk, is still, judging by this proportion of failures, rather unsuccessful as a method of feeding.

(4) Milk from Central Distributing Stations.—There were 59 winter observations upon these patients, of which 35 did well, 20 fairly, 4 did badly and none died. In other words, good results in 93 per cent. of cases and bad results in 7 per cent.

There were 145 summer observations upon infants fed in this way: of these 84 did well, 33 did fairly, 24 did badly, and 4 died. In other words, 81 per cent. of good results, and 19 per cent. bad results. In about one-half of these cases the milk was Pasteurized; in the remainder, with the exception of a group of

42 cases to be mentioned later, in which the milk was given raw, the milk was sterilized.

The great difference between these results and those obtained with the three forms of feeding already considered deserves special attention. The original milk used at the stations was of good quality, but not much better than the bottled milk generally used; with both some form of sterilization was practiced. The difference in results is not explained by the difference in these two factors. There were others of importance which must be sought. A certain amount of constant supervision was exercised over these infants, as some one, usually the mother, came daily to the milk dispensary for the food. Changes could thus be readily made in the milk according to the child's condition. If symptoms of slight indigestion were present, the mother was instructed to dilute the milk; with more severe symptoms, milk was temporarily stopped, etc. This supervision seems to us of the greatest value and can hardly be secured so well in any other way. Again, a mother sufficiently interested in her baby to come or send daily several blocks for the milk is generally one who values what she receives and also the advice which goes with it. This food, obtained in separate bottles for each feeding, is generally regarded by the tenement population as not exactly milk but as something very special, and therefore entitled to much more consideration than any form of food which they could prepare themselves at home.

Another point of importance is that some systematic attempt at milk modification was made in the milk furnished from central stations. Although this could not be done as accurately as for a smaller number of patients, the results were certainly improved by it. Again, what contributed in no small degree to success with this plan of feeding, was that this milk was supplied in separate bottles for each feeding, that the quantity for one feeding was suitable for the child, and that only a proper number of feedings for the twenty-four hours was dispensed at one time. There was not, therefore, the temptation to overfeeding and too frequent feeding, which with other methods are so generally practiced. Finally, the bottles in which it was kept were always properly cleansed, and sterilized, since this was attended to at the central station.

(5) Best Bottled Milk.—This was furnished to 18 infants living in the tenements, to discover whether any perceptible difference existed between the results with this milk and the other va-

rieties. While these observations are not numerous enough to admit of any generalizations, they indicate what was previously believed, that, with the cleanest milk from the best cared for cattle, the smallest number of bad results occurred.

There were 12 infants placed upon this milk in summer; of these 9 did well, 3 fairly, there were none who did badly and no deaths. There were 6 infants upon this milk in winter, of whom 5 did well and 1 did badly.

The difference between very bad, highly contaminated milk, like that purchased at some of the small stores previous to 1902, and the best bottled milk, was in some cases very striking. Protracted diarrhea in infants who were taking store milk was often immediately improved and in several instances promptly cured by simply substituting clean milk, after an interval of no milk, for the previous food. In some severe cases, however, no improvement followed the purer milk.

*Age and Results.*—In 17 cases the ages were not recorded. Of the summer cases 217 were infants under six months; 191 were between six and twelve months, and 47 were over twelve months. The comparative results for the different ages are shown in the following table:

TABLE III. AGE AND RESULTS.—SUMMER.

| | Did well. Per cent. | Did fairly. Per cent. | Did badly. Per cent. | Died. Per cent. |
|---|---|---|---|---|
| Under 6 months... | 52 | 16 | 19 | 13 |
| 7 to 12 months.... | 34 | 32 | 26 | 8 |
| Over 12 months... | 49 | 32 | 19 | 0 |

Of the winter cases 123 were infants under six months, and 74 from seven to twelve months; none was over twelve months.

TABLE IV. AGE AND RESULTS.—WINTER.

| | Did well. Per cent. | Did fairly. Per cent. | Did badly. Per cent. | Died. Per cent. |
|---|---|---|---|---|
| Under 6 months... | 74 | 21 | 0 | 5 |
| 7 to 12 months.... | 70 | 20 | 10 | 0 |
| Over 12 months... | .. | .. | .. | .. |

These figures indicate a considerably higher mortality in infants under six months, but a surprisingly large proportion of infants over this age who did badly. In summer, other factors

than the milk used must be taken into account, one of the most important being the unwise giving of table food to infants over six months old, a practice which is almost universal in the tenement population. Giving fruits even to infants is also an important cause of illness. This was strikingly seen among the Italians. In this class of the population it was the opinion of some of the physicians who observed these cases, that the use of fruit, often unripe, stale or partly decayed, was the cause of more illness in infants and young children than the impure milk.

A separate study has been made of these cases which did badly, and the fatal cases, to determine any other factors beside the food and age which contributed to the results. An attempt was made to discover what sort of care these infants received, what their surroundings were, and whether the results in feeding were due to conditions or diseases entirely outside the digestive tract.

*Cases Doing Badly.*—There were 96 infants who did badly, *i. e.*, they lost weight during the period of observation and had more or less disease of the digestive tract. Eighty-eight of these were summer cases and 8 were winter cases. The previous condition of this group of infants does not throw any special light upon results. This is noted in 86 of the 96 cases. In 52 the previous condition was put down as "good," and in 30 as "not good." It should be remembered that no infants previously in bad condition were included in the observations. The proportion of "good" and "not good" is about the same as in the children taken as a whole.

Care.—In the 88 summer cases this was not stated in 14; 30 were reported as receiving good care, 20 as having fair care, while 24 were positively neglected. The importance of the care the children received, as affecting the results of infant feeding, cannot be expressed in figures. What is included here as neglect was often of the grossest kind. As for example, where a mother was away all day at work and the infant left in charge of some old man, or irresponsible child, and where the visitor found bottles dirty, nipples rolling about the floor, sour milk in the feeding bottles, etc. It was practically the unanimous opinion of the physicians who made the observations that intelligent care had more to do with the results of feeding than any other factor. Many individual instances were reported of infants living under the worst surroundings and whose food was a very inferior kind of milk, and yet if the mother was intelligent and the infant well cared for, it throve in spite of the unfavorable

conditions. On the other hand if the infant had no proper care it made little difference how good the milk furnished might be, the results were usually bad. One case will serve as an illustration. An Italian child two months old who had an intelligent, careful mother, did well for the entire summer on store milk. The following winter the mother was ill for a long time, during which time the child ran down steadily in spite of the fact that it was older and the weather was cold.

Surroundings.—While surroundings had a distinct influence upon the results in feeding, they were decidedly of less importance than the care. Since all these infants lived in tenements none could be said to have good surroundings. They were fair in 40 of the summer cases; distinctly bad in 33; in 15 they were not noted. Of the 8 winter cases, 7 had fairly good surroundings. By bad surroundings are meant very crowded apartments, rear tenements or basements. Many infants living in such places were rarely taken into the open air. Where the mothers availed themselves of the opportunities offered for day excursions upon the water and such fresh air as even the crowded city afforded, a distinct improvement was seen in the condition of the children.

Diarrheal Diseases and Other Forms of Acute Illness.—The number of days of diarrhea indicates pretty well the nature of the symptoms from which these infants chiefly suffered. Of the 88 cases which did badly, only 3 had no diarrhea; 19 had diarrhea lasting from one to seven days; 19, diarrhea from eight to fourteen days; 47, diarrhea of more than two weeks' duration. Other complications were present in 11 cases: bronchitis in 5; pertussis in 2; otitis in 1, and pneumonia in 3 cases. Of the 8 winter cases which did badly, none had diarrhea, but three had other complications, viz., one had measles, one bronchitis, and one pertussis.

*Fatal Cases.*—Of the 632 children observed, 47 or 7.5 per cent. died during the three months of observation. The mortality of the 211 winter cases was 2.8 per cent.; of the 421 summer cases, 11.3 per cent. Of infants under one year, neither in the age nor the previous conditions do we find any sufficient explanation of the fatal result. In the 47 observed who were over one year, no deaths occurred. The care which the fatal cases received is significant. Only 16 of the 47 infants who died received good care, and 19 were recorded as positively neglected. In 21 of the cases the surroundings were bad. The causes of death in the fatal cases were as follows:

| Disease. | Summer. | Winter. |
|---|---|---|
| Diarrheal diseases | 32 | 1 |
| Pneumonia | 5 | 2 |
| Tuberculosis | 2 | 0 |
| Rickets | 1 | 0 |
| Diphtheria | 1 | 0 |
| Marasmus | 0 | 1 |
| Accident | 0 | 1 |
| Unknown | 0 | 1 |
| | 41 | 6 |

The winter case having diarrhea was fed upon good bottled milk sterilized, and had gastric as well as intestinal symptoms. The marasmus case was a child fed upon condensed milk. In only two of the winter deaths could the result be definitely connected with the feeding; while in summer this was true of 30 of the cases.

*Heated Milk vs. Raw Milk for Infants.*—During each of the summers of 1902 and 1903, a special lot of milk was modified at one of the Straus depots for a group of 50 infants, all of whom were under nine months of age, and distributed daily in the usual way. To one-half the infants the milk was given raw; to the other half, Pasteurized.

The modified milk was made from a fairly pure milk mixed with ordinary cream. The bacteria contained in the milk numbered on the average 45,000 per c.c., in the cream 30,000,000. The modified raw milk taken from the bottles in the morning, averaged 1,200,000 bacteria per c.c.; the Pasteurized, about 1,000; taken in the late afternoon of the same day, they had respectively about 20,000,000 and 50,000.

Twenty-one predominant varieties of bacteria were isolated from six specimens of this milk collected on different days. The varieties represented the types of bacteria frequently found in milk. The infants were selected during the first week in June, and at first all were placed on Pasteurized milk. The 50 infants which had been selected were now separated into two groups as nearly alike as possible. On June 15, the milk was distributed without heating to one-half the infants, the other half receiving as before the heated milk. In this way the infants in the two groups received milk of identically the same quality, except for the changes produced by heating to 165° F. for thirty minutes. The

infants were observed carefully for three months and medical advice was given when necessary. When severe diarrhea occurred barley water was substituted for milk.

The first season's trial gave the following results. Within one week 20 out of the 27 infants put on the raw milk suffered from moderate or severe diarrhea; while during the same time only 5 cases of moderate and none of severe diarrhea occurred in those taking Pasteurized milk. Within a month 8 of the 27 had to be changed from raw back to heated milk, because of their continued illness; 7, or 25 per cent., did well all summer on raw milk. On the other hand, of those receiving the Pasteurized milk, 75 per cent. remained well, or nearly so, all summer, while 25 per cent. had one or more attacks of severe diarrhea. There were no deaths in either group of cases.

During the second summer a similar test was made with 45 infants. Twenty-four were put on raw modified milk; 13 of these had serious diarrhea, in 5 of whom it was so severe that they were put back upon heated milk; 10 took raw milk all summer without bad effects; 2 died, 1 from gross neglect on the part of the mother, the other from diarrhea. Of the 21 on Pasteurized milk, 5 had severe attacks of diarrhea, but all were kept on this milk except for short periods, when all food was omitted; 16 did well throughout the summer. One infant, markedly rachitic, died.

The outcome of these observations during the two summers are summarized in the following table:

| Kind of Milk. | *Number of infants.* | *Remained well for entire summer.* | *Number having severe or moderate diarrhea.* | *Average number days off milk during summer.* | *Average weekly gain in weight.* | *Average number days diarrhea.* | *Deaths.* |
|---|---|---|---|---|---|---|---|
| Pasteurized milk, 1,000 to 50,000 bacteria per c.c.. | 41 | 31 | 10 | 3 | 4 oz. | 3.9 | 1 |
| Raw milk, 1,200,000 to 20,000,000 bacteria per c.c ..... | 51* | 17 | 34 | 5.5 | 3.5 oz. | 11.5 | 2 |

Although the number of cases was not large, the results, almost identical during the two summers, indicate that even a fairly pure

*Thirteen of the 51 infants on raw milk were transferred before the end of the trial to Pasteurized milk, because of serious illness. If these infants had been left on raw milk, it is believed by the writers that the comparative results would have been even more unfavorable to raw milk.

milk when given raw, in hot weather, causes illness in a much larger percentage of cases than the same milk given after Pasteurization. A considerable percentage of infants, however, do apparently quite as well on raw as on Pasteurized milk.

*Observations Upon the Use of Feeding Raw and Heated Milk in Older Children.*—The children over three years of age who received unheated milk, containing at different times from 145,000 to 350,000,000 bacteria per c.c., showed almost no gastro-intestinal disturbance. The conditions at three institutions will serve as examples.

In the first of these an average grade of raw milk was used, which, during the summer, contained from 2,000,000 to 30,000,000 bacteria per c.c. This milk was stored in an ice-box until required. It was taken by the children unheated, and yet no case of diarrhea of sufficient gravity to send for a physician occurred during the entire summer. This institution was an orphan asylum containing 650 children from three to fourteen years of age, viz., three to five years, 98; five to eight years, 162; eight to fourteen years, 390.

A second institution used an unheated but very pure milk which was obtained from its own farm. This milk averaged 50,000 bacteria per c.c. The inmates were 70 children of ages ranging from three to fourteen. In this institution not a single case of diarrheal disease of any importance occurred during the summer.

In a third institution an average grade of milk was used which was heated. This milk before heating contained 2,000,000 to 20,000,000 bacteria per c.c. The institution was an infant asylum in which there were 126 children between the ages of two and five years. There were no cases of diarrhea during the summer.

These clinical observations taken in connection with the bacteriological examination at the laboratory show that, although the milk may come from healthy cattle and clean farms, and be kept at a temperature not exceeding 60° F., a very great increase in the number of bacteria may occur. Furthermore, this may occur without the accumulation in the milk of sufficient poisonous products or living bacteria to cause appreciable injury in children over three years of age, even when such milk is consumed in considerable amount and for a period extending over several months. Milk kept at temperatures somewhat above 60° F. was not met with in our investigations, but the histories of epidemics of ptomain poisoning teach that such milk may be very poisonous. It is also to be remembered that milk abounding in bacteria on account of its

being carelessly handled is also always liable to contain pathogenic organisms derived from human or animal sources.

*Results with Very Impure Milk Heated vs. Those with Pure or Average Milk Heated.*—During the summer of 1901 we were able to observe a number of babies fed on milk grossly contaminated by bacteria. In 1902, a systematic oversight of all stores selling milk was instituted by the Health Department, so that the very worst milk was not offered for sale that summer.

*Table Showing the Results of Feeding During July and August, 1901, in Tenement Houses, of 112 Bottle-Fed Infants Under One Year of Age, and of 47 Bottle-Fed Infants Between One and Two Years of Age with Milk from Different Sources, and the Number of Bacteria Present in the Milk.*

| Character of Milk. | *Infants under one year.* Number of infants. | Average weekly gain. | Diarrhea. Mild. | Severe. | Deaths. | *Infants over one year.* Number of infants. | Average weekly gain. | Diarrhea. Mild. | Severe. | Deaths. |
|---|---|---|---|---|---|---|---|---|---|---|
| (1) Pure milk boiled and modified at dispensary or stations; given out in small bottles. Milk before boiling averaged 20,000 bacteria per c.c.; after boiling 2 per c.c. | 41 | 3 oz. | 10 | 8 | 1* | | | | | |
| (2) Pure milk 24 hours old, sent in quart bottles to tenements, heated and modified at home, 20,000 to 200,000 bacteria per c.c. when delivered | 23 | 4½ " | 8 | 5 | 0 | 24 | 4½ oz. | 8 | 2 | 0 |
| (3) Ordinary milk 36 hours old, from a selected group of farms, kept cool in cans during transport; 1,000,000 to 25,000,000 bacteria per c.c., heated and modified at home before using | 18 | 4 " | 6 | 6 | 1† | 12 | 4 " | 1 | 2 | 0 |
| (4) Cheap milk, 36 to 60 hours old, from various small stores, derived from various farms, some fairly clean, some very dirty; 400,000 to 175,000,000 bacteria per c.c. | 21 | ¼ " | 4 | 13 | 4‡ | 7 | ⅛ " | 1 | 3 | 0 |
| (5) Condensed milk of different brands. Made up with hot water. As given, contained bacteria from 5,000 to 200,000 per c.c. | 9 | ¼ " | 5 | 2 | 3 | 4 | 3⅜ " | 1 | 3 | 0 |
| (6) Breast Milk | 16 | 2¼ " | 5 | 2 | 0 | | | | | |

The observations upon the impure milk of 1901 are of sufficient importance to be given in detail, although already mentioned in this report in the observations upon infants of both summers which were fed on "store milk." A group of over 150 infants was so divided that 20 per cent. were allowed to remain on the cheapest store milk which they were taking at the time. To about the same number was given a pure bottled milk from Briarcliff Farms, sent to their homes free of charge by Mr. Walter W. Law. A third

*This infant died from enteritis and toxemia.

†This infant died of pneumonia. There had been no severe intestinal disorder noted.

‡One of the four had pertussis, the remaining three died from uncomplicated enteritis.

group was fed on the same quality of milk as the second, but sterilized and modified at the Good Samaritan Dispensary. A fourth group received milk from an ordinary dairy farm. This milk was sent to a store in cans and called for by the people. A few infants fed on breast and condensed milk were observed for control.

In estimating the significance of the observations recorded in the tables, one should bear in mind that not only do different infants possess different degrees of resistance to disease, but that, try as hard as the physicians could, it was impossible to divide the infants into groups which secured equal care, and were subjected to exactly the same conditions. It was necessary to have the different groups in somewhat different parts of the city. It thus happened that the infants on the cheap store milk received less home care than the average, and that those on the pure bottled milk lived in the coolest portion of the city. Certain results were, however, so striking that their interpretation is fairly clear. It is to be noted that the number of infants included in each group is small.

There is nothing in the observations to show that fairly fresh milk from healthy cows, living under good hygienic conditions and containing, on some days, when delivered, as many as 200,000 bacteria per c.c., had any bacteria or any products due to bacteria that remained deleterious after the milk was heated to near the boiling point.

On the other hand it is possible that certain varieties of bacteria may, under conditions that are unsanitary, find entrance to milk and survive moderate heat or may develop poisonous products resistant to heat in sufficient amount to be harmful, even when they have accumulated to less than 200,000 per c.c.

Turning now to the results of feeding with milk which has been heated, and which before sterilization contained from 1,000,000 to 25,000,000 bacteria per c.c., averaging about 15,000,000, though obtained from healthy cows living under fairly decent conditions and kept moderately cool in transit, we find a distinct increase in the amount of diarrheal disease. Though it is probable that the excessive amount of diarrhea in this group of children was due to bacterial changes which were not neutralized by heat or to living bacteria which were not killed; yet it is only fair to consider that the difference was not very great and that the infants of this group were under surroundings not quite as good as those on the purer milk.

Finally, we come in this comparison to the infants who received the cheap store milk Pasteurized. The milk had frequently to be returned because it curdled when boiled, and contained, according to the weather, from 4,000,000 to 200,000,000 bacteria per c.c. In these infants the worst results were seen. This is shown not only by the death rate, but by the amount and the severity of the diarrheal diseases, and the general appearance of the children as noted by the physicians. Although the average number of bacteria in the milk received by this group is higher than that received by the previous group, the difference in results between this group and the previous one can hardly be explained by the difference in the number of bacteria. The varieties of bacteria met with in this milk were more numerous than in the better milk, but we were unable to prove that they were more dangerous. Probably the higher temperature at which the milk was kept in transit and the longer interval between milking and its use allowed more toxic bacterial products to accumulate.

*Observations Upon Milk Feeding in Institutions.*—During the summer of 1901, observations were made by Dr. Long in nearly all the institutions for children situated in New York City. He found, with three exceptions, that no particular care was taken to secure a supply of pure milk. Samples taken from the supply of the other institutions showed that the milk averaged over 1,000,000 bacteria per c.c. when delivered, and at half of them it averaged over 10,000,000 per c.c. The cream frequently contained 60,000,000 bacteria per c.c. The milk at two places contained at times over 100,000,000, At several special hospitals for young children the milk and cream contained on different days from 26,000,000 to 157,000,000 bacteria per c.c. Formaldehyde was also occasionally found, especially in the cream. Samples of milk were taken weekly from most of the institutions and examined as to the number of bacteria, and in some cases also as to the varieties present.

As a rule to the children who were over three years old the milk was given raw, while for those under two it was heated (sterilized). For those between two and three years, it was sometimes heated, sometimes not. In only two institutions was it possible to trace any epidemic of diarrhea among the infants and older children, and in these, the particulars of which are given below, the results cannot be reasonably attributed to the milk.

The first epidemic of diarrhea occurred at the New York Infant Asylum during June and July, 1901. There were in the institu-

tion 86 infants; 30 of these were bottle-fed and 56 were on breast milk. Of the 30 bottle-fed infants, 22 suffered from diarrhea. Of the 56 breast-fed infants, only 7 were affected. The epidemic was mild in character, only 2 infants dying.

This epidemic, which occurred during and after a period of very hot weather, at first glance might be ascribed to the milk. The fact, however, that 7 cases occurred among the breast-fed infants, that the cases occurred from time to time, not simultaneously, and that the milk used had been previously heated, points rather to an infection communicated from the sick to the well than to one conveyed by the milk, unless it was true that the milk had been contaminated in the wards.

In another institution an epidemic of moderately severe diarrhea occurred during the winter, in which at first all the cases came from one ward, and then later from a second ward. In this epidemic, infection through the milk was not conceivable, since the bottle-fed infants in the wards where no illness occurred received milk from the general supply.

*General Conclusions.*—In addition to the statistical reports of their observations, the different physicians who watched the infants in their homes were asked to state their own conclusions regarding the general problem of infant-feeding in the tenements. These general impressions are most suggestive and cannot fail to be of interest to all who are working at this difficult problem.

It was practically the unanimous opinion that the most important factor in securing good results is intelligent care. This covers much: clean bottles and nipples; the willingness and ability to carry out directions as to methods of feeding, quantities, frequency, the stopping of milk at the first signs of serious diarrhea, etc.; proper care of the milk itself while in the house, and methods of sterilizing; suitable clothing and cleanliness of the children, and as much fresh air as possible.

Most of the physicians stated that, leaving out the very worst store milk in summer, the results were much less affected by the character of the milk than they had anticipated, and distinctly less than by the sort of care the infants received.

The surroundings alone had much less influence on results than was anticipated. For not only were breast-fed infants found doing well under the most unfavorable surroundings, but those also who received only the bottle as a rule did well, provided they received intelligent care and good milk.

The depressing effects of great atmospheric heat, *i. e.*, a temperature in the neighborhood of 90° F., or over, were very marked in all infants, no matter what their food. Those who were ill were almost invariably made worse, and many who were previously well became ill. A bad method of feeding, or, rather, a feeding without any method, was responsible for many failures when the milk itself was of good quality. Common mistakes were, feeding an infant every time it cried; giving it a full bottle, no matter what the age of the child, and letting it take as much as it would; preparing a large bottle of food at one time, and warming it over from time to time until the child had taken the whole of it, or allowing the milk to turn sour in the feeding bottle. Quantities proper for single feedings were almost invariably disregarded. Proper washing of feeding bottles was seldom seen in a tenement-house. Such matters as these are closely connected with intelligent care, which has been already considered.

The importance of the matters just mentioned raises the question of how much can be accomplished by the distribution of printed slips of directions. It was the observation of the physicians that comparatively little can be accomplished by these alone. Such printed circulars are often treated by the tenement-house mother very much as most of us treat the printed advertisements which are left at our doors—seldom read and soon thrown away. Mothers are often anxious and willing, but ignorant and stupid. Many cannot read and many more have not the wit to apply in practice what they read. When, however, such printed advice was preceded or accompanied by personal explanation, it was found of great assistance. Personal contact is the only sure way to influence these people, and this must be frequently repeated to influence them permanently; as an aid to this, printed slips are useful. Printed directions, however, should be as simple as possible in statement, few in number, and touch only the most vital matters, telling the mother always what she is to do, not what she is not to do.

*Summary.*—The observations here recorded were made upon the groups of infants for periods of about three months only, and the conclusions drawn relate especially to the more immediate effects of the milk.

1. During cool weather neither the mortality nor the health of the infants observed in the investigation was appreciably affected by the kind of milk or by the number of bacteria which it contained. The different grades of milk varied much less in the

amount of bacterial contamination in winter than in summer, the store milk averaging only about 75,000 bacteria per c.c.

2. During hot weather, when the resistance of the children was lowered, the kind of milk taken influenced both the amount of illness and the mortality; those who took condensed milk and cheap store milk did the worst, and those who received breast milk, pure bottled milk, and modified milk did the best. The effect of bacterial contamination was very marked when the milk was taken without previous heating; but, unless the contamination was very excessive, only slight when heating was employed shortly before feeding.

3. The number of bacteria which may accumulate before milk becomes noticeably harmful to the average infant in summer differs with the nature of the bacteria present, the age of the milk, and the temperature at which it has been kept. When milk is taken raw, the fewer the bacteria present the better are the results. Of the usual varieties, over 1,000,000 bacteria per c.c. are certainly deleterious to the average infant. However, many infants take such milk without apparently harmful results. Heat above 170° F. (77° C.) not only destroys most of the bacteria present, but, apparently, some of their poisonous products. No harm from the bacteria previously existing in recently heated milk was noticed in these observations unless they had amounted to many millions, but in such numbers they were decidedly deleterious.

4. When milk of average quality was fed sterilized and raw, those infants who received milk previously heated did, on the average, much better in warm weather than those who received it raw. The difference was so quickly manifest and so marked that there could be no mistaking the meaning of the results. The bacterial content of the milk used in the test was somewhat less than in the average milk of the city.

5. No special varieties of bacteria were found in unheated milk which seemed to have any special importance in relation to the summer diarrheas of children. The number of varieties was very great, and the kinds of bacteria differed according to the locality from which the milk came. None of the 139 varieties selected as most distinct among those obtained injured very young kittens when fed in pure cultures. A few cases of acute indigestion were seen immediately following the use of Pasteurized milk more than thirty-six hours old. Samples of such milk were found to contain more than 100,000,000 bacteria per c.c., mostly spore-bearing varieties. The deleterious effects, though striking, were not serious

nor lasting. At the present time there is in New York City no general sale from stores of "Pasteurized" or "sterilized" milk, so that it is here very rare for such milk to be used thirty-six hours after heating.

6. After the first twelve months of life, infants are less and less affected by the bacteria in milk derived from healthy cattle. According to these observations, when the milk had been kept cool the bacteria did not appear to injure the children over three years of age, at any season of the year, unless in very great excess.

7. Since a large part of the tenement population must purchase its milk from small dealers, at a low price, everything possible should be done by health boards to improve the character of the general milk supply of cities by enforcing proper legal restrictions regarding its transportation, delivery, and sale. Sufficient improvements in this respect are entirely feasible in every large city to secure to all a milk which will be wholesome after heating. The general practice of heating milk which has now become a custom among the tenement population of New York is undoubtedly a large factor in the lessened infant mortality during the hot months.

8. Of the methods of feeding now in vogue, that by milk from central distributing stations unquestionably possesses the most advantages, in that it secures some constant oversight of the child, and since it furnishes the food in such a form that it leaves the mother least to do, it gives her the smallest opportunity of going wrong. This method of feeding is one which deserves to be much more extensively employed, and might, in the absence of private philanthropy, be wisely undertaken by municipalities and continued for the four months from May 15 to September 15.

9. The use, for infants, of milk delivered in sealed bottles, should be encouraged whenever this is possible, and its advantages duly explained. Only the purest milk should be taken raw, especially in summer.

10. Since what is needed most is intelligent care, all possible means should be employed to educate mothers and those caring for infants in proper methods of doing this. This, it is believed, can most effectively be done by the visits of properly qualified trained nurses or women physicians to the homes, supplemented by the use of printed directions.

11. Bad surroundings, though contributing to bad results in feeding, are not the chief factor. It is not, therefore, merely by better housing of the poor in large cities that we will see a great reduction in infant mortality.

12. The observations indicate that close percentage modification of milk, although desirable in difficult cases, is not necessary to obtain excellent results with the great majority of infants, and that a certain adjustment of a healthy infant to its food is usually soon secured.

13. While it is true that even in the tenements the results with the best bottle-feeding are nearly as good as average breast-feeding, it is also true that most of the bottle-feeding is at present very badly done, so that as a rule the immense superiority of breast-feeding obtains. This should, therefore, be encouraged by every means, and not discontinued without good and sufficient reasons. The time and money required for artificial feeding, if expended by the tenement mother to secure better food and more rest for herself, would often enable her to continue nursing with advantage to her child.

14. The injurious effects of table food to infants under a year old, and of fruits to all infants and young children in cities, in hot weather, should be much more generally appreciated.

---

## BUTTER-MAKING MACHINERY IN CANADA.

F. S. S. Johnson, Commercial Agent at Stainbridge, reports to the Department of State, September 1, 1903: Quebec and Ontario are the best butter-producing provinces in the Dominion of Canada. One can hardly travel in any direction without seeing a creamery or a cheese factory. Small farms are scarce; on the other hand the acreage to a farm is generally 200 or more, most of which is given up to pasturing and the raising of hay and grain. The average number of cattle to a farm is 30 or more. Since the establishment of creameries at almost every hamlet or village in these provinces the making of butter by hand has been done away with. I find that separators from the United States can compete with those of Canadian make, and as separators are on the free list I am surprised that our manufacturers have not taken advantage of this, as well as of the excellent market, to extend their trade in these provinces. In Canada, I am convinced, there is a splendid field for our people to operate in. The Canadians, as a rule, are anxious to try our machinery, which is superior to their own, as well as cheaper in price, and I would suggest that our manufacturers send their salesmen to these provinces to work up this trade.

# THE SANITARY RELATIONS OF THE SOIL.

By Dr. Harvey B. Bashore.

Sanitarians have been paying much attention to the soil, and the more the subject is studied the more convincing does it become that the soil is one of the primal factors in health and disease.

The kind of rock that lies under our feet, or rather under our houses, is an item of no mean value; the inclination and dip of the strata are of vast importance in regard to wells and springs—the inclination may be such that filth from a far-away privy may poison a distant well.

I know of a small town, built on a heavy alluvial clay, which has no typhoid fever; another, not far distant, situated on hills of upturned shale, has typhoid endemic, and the deepest well in this town is the most polluted, this all due primarily to the character of the rock.

Cavern-bearing strata of limestone, so common in some regions, have carried poison for many a mile; and the tilted strata of gneiss on Manhattan Island make even the deepest well dangerous. If New York was underlaid by horizontal strata, like London and Paris, good drinking water could be obtained by borings.

Important as is the rock under us, yet possibly more important still is the upper layer of the soil—the first foot or so—known to agriculturalists as humus; this teeming with bugs and bacteria of all sorts is a filter plant and a sewage disposal works all in one. About this vast laboratory we know very little, but we do know that here is destroyed all manner of filth, rendering it harmless and fit to be taken up by growing plants.

Though the soil is a filth destroyer of such high value, it must not be overtaxed, and continued residence in one place, unless special care is taken, always does overtax it.

The wandering nomad overcame this by frequently changing his abode. Experience had taught him that it was unhealthy to live in one place for any length of time. The demands of civilized life require, on the other hand, that man keeps to a fixed habitation, and he then begins to sow the seeds, which his descendants of the second or third generation reap as a whirlwind, of typhoid. Yet with proper precautions all this is averted, for the amount of land usually surrounding a house will dispose of all its waste, if only care is taken.

Another factor of the soil, irrespective of filth, is moisture; this moisture being due to the absorptive power of the material, varies, of course, with different soils. In the scale of absorptive ability clay ranks first, and sand-gravel beds rank last. Hence clay is considered to be a damp, cold soil for house building, and it is a known fact that dwellers in such localities suffer much from rheumatism in its various forms, especially that form known as muscular rheumatism—a minor ailment, I know it is claimed to be; but if the lost days of labor and the annoyance caused by this trifling ailment are considered carefully, the economic value of this one disease would teach us its real importance.

It has been found that a well-drained and dry habitation is of great value to these "rheumatics," and a consequent attention to the soil in such cases, where it is possible, will be sure to reap its reward.

The ground-water—that underground sheet of water which completely fills all the interstices of the soil at a certain depth—has little to do with health save in the pollution of water supplies, and in this it does play an important part: whether a well pierces slate or limestone—whether the strata are horizontal or perpendicular—the direction and the location of the neighboring water-courses are all points of real interest to the users of well water. The ground-water is in continual motion toward the nearest streams, and for that reason a well on a hill may be poisoned by a privy in a neighboring valley.

The groundwater, too, has fluctuation of rise and fall. During a dry summer, when the water-courses are low, the ground-water is correspondingly low; likewise the cutting away of hills, etc., lower the ground-water level.

In the building and grading of a great railroad yard in a locality with which I am well acquainted, all the wells of an elevated neighboring district became dry, due, not as the inhabitants thought, to the blasting, but to the excavation of the hillside, a procedure which simply lowered the ground-water. Great changes like this, too, are likely to be followed by outbreaks of disease on account of the opening of new seepage channels.

The ground-air, which with its lessened oxygen and increased carbonic oxide is unfit for breathing, depends on the character of the soil, loose, porous soils, of course, permitting its escape much more readily than the compact and harder rocks. Special foundations and concrete basements are especially desirable over these loose soils, while over a compact alluvial clay such precautions

are not as necessary—such clays being almost impervious to air, and the clay itself acting as concrete.

More attention to the sanitary study of the soil will likely bring out new developments, and make it of more importance in the future. Lord Bacon long ago said, "He that builds a fair house upon an ill seat committeth himself to prison"—a prison of suffering and disease, may be added.

---

## GALALITH, OR MILK-STONE MANUFACTURES.

At the Hygienic Milk Supply (Hygienische Milchversorgung) Exhibition, which was lately held at Hamburg, the Vereinigten Gummiwaren-Fabriken, of Harburg and Vienna, exhibited a number of objects which seemingly had nothing whatsoever to do with hygienic-milk supply. There were shown, nicely arranged in glass boxes, combs seemingly made of horn; cigar holders, with amber-colored mouthpieces; knives and forks, with handles similar in appearance to ebony; ferrules for umbrellas and sticks, and balls, rings, chess figures, dominoes, etc.; also a small table with an inlaid marble slab, and finally a number of thick slabs and staves with every imaginable variation of marble colors, but of considerably less weight than real marble. These objects were made of "galalith"—*i. e.*, milk stone.

Skimmed milk, in spite of its many valuable qualities, has so far been little used; it contains a considerable portion of nutritious matter—*i. e.*, 1 liter (1.05 quarts) of skimmed milk is of about equal value to a quarter of a pound of meat. It is by far too little appreciated as a cheap food for the people, hence what the German peasant cannot sell to milk-sugar factories or use for the manufacture of cheese is given to cattle and pigs as food. The principal albumenoid substance of skimmed milk, the casein, is the raw material out of which the new product galalith is manufactured. More than fifteen years ago the idea was originated to manufacture various articles like buttons, handles, ornamented plates, and colored pencils out of casein. The inventor took out a patent for a manufacturing process, which is described as follows:

Fresh casein—*i. e.*, ordinary or dried curds—were dissolved in hot soap water; to this solution the required coloring ingredients and a metallic salt were added, and a firm substance consisting

of casein and metallic soap was produced, which, by drying and pressing into molds, could be given any desired shape. It is to be supposed that the inventor had found out by continued trials that casein by addition of a metallic salt becomes brittle and softens easily in water. With a view to counteracting this latter drawback soap was added, but the articles produced thus were soft and brittle, and the invention was not a success. The chemical factory of Schering at Berlin then invented a process, the idea of which was to make casein insoluble by the addition of formaldehyde, but the disadvantage of this invention was that the articles produced distended considerably in water.

The inventors of galalith succeeded, after many troublesome trials, in doing away with the deficiencies of former methods and in using the good that was in the former ones, for the working out of an entirely new process. Their first aim was to make an insoluble union of casein by the addition of salts and acids. The substance thus obtained was dephlegmated and dried, and, finally, by the addition of formaldehyde, the galalith was obtained. To produce, for instance, a material similar to ebony, which could be used for handles of table knives, they proceeded as follows: Dissolved casein was given a dark color by the addition of soot and, with the help of a metallic salt, "acetate of lead," a slate-colored precipitate was obtained. This was mixed with water and the thin pap filled into a cloth stretched over a frame. The water becoming absorbed by the cloth, the pap contracted into a uniform, firm and dark mass; this was placed in a solution of formaldehyde and, after being dried, a product resulted which in lustre and color was equal to ebony. In this way a raw material is produced which the inventors have protected by numerous patents.

An advantage of the new product as compared with celluloid is the fact that it does not ignite so easily and is entirely odorless. Trials have proved that even when kept for weeks in water it does not distend more than the best quality of buffalo horn; after one month it had not soaked in more than 20 per cent. of water. Of late trials have been made to produce, by the addition of vegetable oils, an insulating material for electrotechnical purposes.—OLIVER J. D. HUGHES, Consul-General, Coburg, June 17, 1903.

TELLING FORTUNES.—Text: "Be not among winebibbers; among riotous eaters of flesh: for the drunkard and the glutton shall come to poverty; and drowsiness shall clothe a man with rags."—Prov. xxiii., 20-21.

## MEDICAL EXCERPT.

By T. P. Corbally, A.M., M.D.

Appendicitis in the Army.—M. Chauvel presented to the Académie de Médecine ("Le Progrès Médical," Nov. 11, 1903) a very interesting lecture on appendicitis in the army. A comparison of all the operations shows:

1. The number has steadily increased during the last seven years in our military hospitals. From 49 in 1897 it rapidly increased until it was double that number in 1899; it was three times as great in 1900, and still further increased in 1901 and 1902, the last year for which statistics have been furnished.

2. The mortality after the operations has varied within relatively limited bounds; its highest rate was 20.7 per cent. in 1899; its lowest, 11.5 per cent. in the preceding year. The death rate has been progressively diminishing in the last two years, for which the rate was 12.5 and 12.7 per cent. in each, respectively.

M. Chauvel has remarked the extreme rarity of appendicitis in Algeria and in Tunisia, and explains it thus:

"The food is almost exclusively vegetable, which, united with a natural resistance largely developed for articles of intoxication that attack the lymphatic organs; the influence of climate, which is dry and warm; this seems at present to be the rational explanation of the infrequency of appendicitis in the native population of Algeria and Tunisia. Situated in circumstances that force them to a nutriment very limited in quantity and non-stimulating in quality, with but little meat, the European colonists enjoy a relative immunity from the disease. As regards our soldiers—the French—whose diet differs but little from that of the troops of the metropolis, the influence of the dry, warm temperature, which favors the functions of the skin, and the extreme rarity of grippe may be supposed to exert some beneficial results. It seems to me, however, prudent to limit the inference to a simple statement of facts."

Gangrenous Appendicitis.—M. Reynier, for the diagnosis of gangrenous appendicitis, however, insists on the difference between the local phenomena, which are mild or almost imperceptible, and the general symptoms, as pulse and temperature, which are alarming. A man twenty-eight years

of age, who on the fifth and sixth days of a crisis of appendicitis which followed several other mild attacks, presented a pulse of 120 and a temperature of 39.8 Cent., notwithstanding the application of ice and the use of mild diet, the diagnosis was gangrenous appendicitis and an immediate operation. The appendix was entirely free and resting in a reddish liquid. Examined after section it was covered with mucus of a thick, creamy character and a cavity full of thickened serum. At the time of the operation the abdomen was soft, the countenance good, the respiration normal, nothing about the patient gave rise to the suspicion of gangrenous change about the appendicitis.

M. Quénu said that the description presented by M. Reynier was true for cases of gangrenous appendicitis from its onset, but in cases of gangrenous appendicitis of secondary character, coming on in a centre of suppuration already established, the disease assumes during the earlier period the characteristics of ordinary appendicitis, and it is only secondarily that it assumes the course of a general infection.

According to M. Quénu, an early diarrhea presents one symptom of a gangrenous appendicitis, just as in some cases extremely severe pain, well diffused, may lead to the suspicion of general peritonitis.

What designates the situation of the local symptoms is the general intoxication, which is determined by the anesthesia.

Two Dwarfs Brother and Sister.—MM. Poncet and Leriche ("Gazette Hebdomadaire," Oct. 25, 1903) presented two dwarfs, the brother measured m. 1.20, the sister, m. 1.17. They were themselves children of dwarfs. They are perfectly formed. Radiography shows that the diaphyso-epiphysaires jointures are perfect. The diminutive size does not indicate any pathological condition; it is an ancestral dwarfish size which calls to mind the pygmies of olden times. The French metre is 3.28 feet, English.

La Maladie du Sommeil.—MM. Blanchard and Brumpt presented three cases of diseased sleep ("Progrès Médical," Oct. 24, 1903). At Brazzaville, M. Brumpt had under observation 38 cases. Castellani had stated that this disease was caused by the presence of trypanosomes in very large quantities in the cephalo-rachidian liquid. In 38 cases he found the parasite 32 times. Brumpt also found them in similar proportions. The parasites swarm in the cephalo-rachidian liquid of the patients.

Two types of the sleep disease—maladie du sommeil—are found. One is characterized by marked swelling of the ganglions of the neck; it is to this form that the two negroes presented to the Académie belong. The disease always causes death more or less rapidly.

Brumpt has tried to inoculate animals with this disease. He tried the experiment on rats, mice and guinea-pigs, but so far without result; still it is possible that, as in the case of the parasite of the *magana*, the development may be very slow; on the other hand a monkey inoculated has died with all the symptoms of the disease. Unfortunately, the histological examination was not made. The death was on board a ship.

M. Laveran confirms the infectious origin of the disease and shows that the trypanosome acts somewhat like the disease of Ditton (some call this Dutton); the parasite seems to be the same, but in the disease of Ditton the parasite remains in the blood, while in the disease of sleep it passes into the cephalo-rachidian liquid. There is no distinctive characteristic yet found by which to differentiate between these two trypanosomes.

M. Chantemesse, apart from the infectious origin and the inoculation, has studied the transmitting agent (l'agent vecteur) of the disease. He shows that this seems to be a fly; the *glossina palpanis.*

M. Blanchard coincides in the opinion regarding the part taken by the *glossina.* The geographical distribution of the insect, and that of the disease of sommeil—sleep—coincide.

In America the negroes have never introduced the disease, perhaps from the fact that the fly—*glossina*—does not exist there.

ATTEMPT TO RENDER THE GUINEA-PIG ANTI-TURERCULOUS.—Attempts have been made ("Gazette Hebdomadaire," Oct. 25, 1903) in different ways to find a means of immunizing against the bacillus of Koch.

E. Levy has shown that recently the bacillus of Koch, no matter how virulent it may be, if immersed during two days or more in a dilute solution 8 per cent. of glycerine, becomes harmless for animals. Using the bacillus treated with glycerine after a time more or less short, varying from five to two days, the author inoculated guinea-pigs progressively. After the injections of the virulent cultures there results only a local suppurative lesion, while other animals so treated without the glycerine have tuberculosis developed progressively. The autopsy of the animals vac-

cinated with the glycerine preparation thirteen weeks afterward showed no symptoms of tuberculosis. There is in this case a series of incidents and experiences of great interest, and the case is one that deserves further investigation.

E. Levy, Die Moglichkeit Meerschweinchen gegen Tuberkulose zu immunisiren. Centralb. f. Bakt. 33. 9. 1903 (The possibility of protecting guinea-pigs against tuberculosis). Dr. J. Sabrazès.

THE SEAT OF EPILEPTIFORM CONVULSIONS, TONIC AND CLONIC. —M. Nino Samaja ("Progrès Médical," November 14, 1903) has employed the method of M. Battelli in order to determine if the convulsive phases as tonic or clonic which may follow after the application of the alterative current are under the influence of the different nerve centres. From these experiments the author draws the following conclusions:

1. The cortical motor zone is the exclusive centre of clonic convulsions in full-grown dogs and cats. The remainder of the cerebro-spinal axis gives for them only tonic convulsions. In the mammalia, the less elevated species in the series of animal life, as rabbits and guinea-pigs, just as in the young of dogs and cats and in the green frog, the motor layer is not the centre of convulsions.

2. The bulb or isthmus of the encephalon in the guinea-pig and the rabbit is the seat of clonic convulsions. In the guinea-pig and the green frog the insulated bulb of the encephalon is the seat of the clonic convulsive centre.

3. The medulla throughout its whole extent in all the mammiferous animals is the seat of a centre exclusively tonic: it never causes clonic convulsions. In the green frog, the medulla, on the contrary, causes clonic convulsions.

It is seen, then, that the clonic convulsive centre goes up progressively in the animal scale from the marrow to the cerebral meninges: bulbo-medullary in the green frog, bulbar or basilar in the guinea-pig and the rabbit, it becomes cortical in the full-grown dog and cat. In man, since in the case of decapitation the trunk presents no sign of convulsions, the seat of tonic convulsions is entirely basilary; that of clonic convulsions is cortical.

CIRCULATION OF THE CEPHALO-RACHIDIAN LIQUID.—M. Cathelin has studied the circulation of the cephalo-rachidian liquid ("Progrès," Oct. 31, 1903). The chorioid plexus, the secreting glands, the subarachnoidian sereuse, the reservoir and not the conductor: the liquid passes into the lymphatic circulation through

the perivascular and the thoracic canal, and falls into the left subclavian vein, then into the great circulation, to return through the chorioid plexus by means of the different vessels. The very free outflow of the cephalo-rachidian liquid after a wound of the spine very strongly favors this theory.

SUBACUTE TETANUS.—M. Blin, referring to a communication of M. Sicard at the previous session, reported a case of *tetanos subaigu* cured with chloral and antitetanic serum. The patient had strong rigidity of muscles, especially contractions of the masseters. He had from five to six attacks in 24 hours. The cause of the *tetanos* was a wound in the forearm made by the neck of a broken bottle. The incubation lasted some days. The treatment consisted of chloral in fractional doses from six to eight grams a day and hypodermic injections of antitetanic serum. The patient had retention of urine, which required the use of the catheter; he had also rubeoliform erythema. The author does not favor subarachnoid injections.

R. ON. MED. LIB. MAR 21 1904

DRINKING WATER IN THE ARMY.—M. Vallin read ("Progrès Médical," Oct. 31, 1903), on the prophylaxis of epidemics in the army, a report in which he draws the following conclusions:

1. The first and best prophylactic measure against the invasion of diseases which are epidemic and propagated by water is to provide pure water from springs well chosen and equally well protected.

2. These conditions fulfilled, it is useless to have recourse to any means of sterilizing water.

3. Without having recourse to filters, which, if well cared for, may often render great service, there is always an opportunity to use sterilizing with heat.

M. Kelsch asked that the report be printed in the "Bulletin" before the conclusions be discussed.

RHEUMATIC PAIN AND FEVER.—Dr. E. G. Evans, in an article on "Acute Articular Rheumatism" ("The Medical and Surgical Bulletin") says: "Salol is the best intestinal antiseptic we have, and antikamnia as a pain reliever is, without doubt, unsurpassed; therefore, the combination of these two remedies in the form of the well-known 'Antikamnia and Salol Tablets' affords us the ideal medicament for pain and fever in rheumatic conditions. Patients appreciate the fact that when administering antikamnia you re-

lieve the pain without giving them morphia, while the salol acts as a germicide and antiseptic, tending to ameliorate generally the symptoms of the disease. Antikamnia and Salol Tablets (each tablet contains 2½ grs. antikamnia and 2½ grs. salol) are best given in doses of two tablets every three hours until ten or twelve tablets are taken during twenty-four hours. The patient's bowels must be kept open and the diet should be light. Alcohol is contra-indicated, and water should be freely and frequently given. The bed covering should not be too heavy, but warm. Cold water packs, as well as hot fomentations, are very beneficial."

ILLUMINATING GAS IN PUBLIC SANITATION.—Lastchenkoff says (*Roussky Vratch*—"New York Medical Journal," Dec. 12) that it is very important for a city to compel the gas contractors to furnish a certain standard quality of gas that shall not contain more than definite limits of injurious substances. The chief questions are the amounts of sulphur and carbon dioxide which illuminating gas shall be allowed to contain. There should not be more than fifty grammes of sulphur in each hundred cubic meters of gas, and not more than eight per cent. of carbon dioxide. The mixture of water gas with illuminating gas should be allowed, only in such limits as do not exceed the normal limit of carbon dioxide indicated. The supervision of the gas supply should be administered by the municipal boards of health.

TO MAKE ALCOHOL UNDRINKABLE.—Those of our readers ("The American Architect," Nov. 28) who are experts in alcohol may be interested in the announcement of a competition, instituted by the Russian Minister of Finance, for the best means of making alcohol undrinkable, without lessening its usefulness in the arts. As the liquor business of Russia has, in the interest of temperance, been assumed by the Government, the solution of this problem is one of considerable importance, financially as well as industrially, and the Minister of Finance, with characteristic Russian liberality, offers a premium of fifty thousand roubles, or about twenty-seven thousand dollars, for a substance satisfying all the conditions of the programme. Each competitor must submit a memoir, setting forth the experiments which have led to his discovery, and giving the composition, properties, and methods of manufacture and use, together with a sample of not less than ten kilogrammes weight, of the substance. If several meritorious preparations are submitted, the premium may be divided among their inventors, and all inven-

tions receiving premiums are to become the property of the Government.

A HOUSE OF BEER BOTTLES.—Tonopah, Nev., aside from being famed on account of its vast mineral resources, also occupies the unique distinction of numbering among its inhabitants a man who is able to live in a glass house, and throw unlimited quantities of stones at the same time without suffering any of the serious inconveniences popularly supposed to surround such an association. Not a tree grows within sixty miles of the great mining camp, and very naturally building material and fuel bring all sorts of fancy prices, the commonest kind of lumber selling for $66 per 1,000 feet, while inferior grades of scrub cedar command $22 a cord. Consequent upon this condition, various subterfuges are resorted to in the architectural make-up of Tonopah. There are houses made of straw; of burlap sacks trimmed with blue jean overalls; of tin from five-gallon oil-cans; of dry goods and cracker box lumber; of mud, stone, tents, cloth—in fact, almost every sort of contrivance is resorted to as a makeshift for a place of habitation; but it has remained for William F. Peck, a miner, to devise a house in a class by itself. He has constructed of empty beer bottles a house 16x20 in the clear, with ceilings 8 feet high, and containing two rooms. It was built in October of last year by Mr. Peck entirely unaided, at such odd moments as he could spare from his regular duties at the mine. Ten thousand empty beer bottles were incorporated in the structure. The inside walls are plastered with mortar, which is spread to a depth sufficient to cover the protruding bottle necks, thus making a smooth surface. Mr. Peck lived all last winter in his peculiar abode with his wife and two children, a girl of seven and a boy of three years, and says, while the temperature in many residences in Tonopah reached the freezing point quite often, his family found their glass house exceedingly comfortable at all times.—"Kansas City Star."

THE USE OF THE POTATO.—According to statistics cited by Waldron, in the "Revue pour Tous," December, 1899, the potato is more largely used in Europe than any other food substance, the average amount annually eaten per capita being as follows in the different countries named: England, 242 pounds; Austria, 662 pounds; France, 697 pounds; Norway and Sweden, 739 pounds; Holland, 840 pounds; Germany, 1,298 pounds; Ireland, 1,364

pounds. The per diem consumption for England is 11 ounces per day, and Ireland, 3¾ pounds, or nearly six times as much.

---

### PURIFYING WATER WITH OZONE.

Consul-General Hughes, Coburg, reports, July 17: Splendid results have recently been obtained at Wiesbaden and Paderborn in the purification of water by the use of ozonized air. Water of an inferior quality is thus turned into very good drinking water. Ozonizers of the Siemens type are used to treat the air.

The plant at Wiesbaden contains 48 of these ozonizers, forming duplicate groups of 24 each. A set of eight ozonizers receives an alternating current of 8,000 volts from a step-up transformer. One pole of the apparatus consists of the cooling water of the glass tube, and is earthed, while the other pole, connected with the transformers, is placed in an inaccessible position, and therefore causes no danger to the attendant. The ozonizing tubes are inclosed in a cast-iron case consisting of three parts: (1) A completely closed central portion, into which are firmly screwed the eight ozone tubes; (2) an upper part, acting as a reservoir and distributer of the air, and (3) a lower part, forming the ozone-collecting chamber. In the upper chamber, removed from all possible touch of the attendant, are fixed the terminals from the transformers. On the floor of the lower compartment are placed the high potential cylinders with their insulating glass rods, and in addition an automatic device to prevent a short-circuit through any leakage of the cooling water. This consists simply of a strip of filter paper stretched across a metal spring. If the filter paper gets moist it tears, the spring opens out and automatically places the particular ozonizer off duty.

### THE KNELL OF THE FOG DEMON.

There appears, says "The Surveyor" of Nov. 27, to be no end to the uses of electricity, which enters so largely nowadays into our domestic and commercial economy. One of its latest applications is to the dispersal of fogs, and if the project proves successful, it will confer an immense boon upon the inhabitants of large cities, such as London, Manchester and Glasgow, each of which possesses its own characteristic brew. The idea is not wholly new; as long ago as 1884 Professor Lodge and another

discovered that the discharge of electricity from points into a foggy atmosphere almost instantaneously dispersed the particles of dust or water, and it has been suggested from time to time that the phenomenon might be reproduced on a large scale for the purification of the atmosphere of towns. It has, however, been left for the professor—now Sir Oliver Lodge—to demonstrate its practicability. Its realization depends upon the use of the Cooper-Hewitt mercury vapor lamps, as rectifiers, to give the unidirectional discharge which is essential to successful operation. In the course of his experiments, Sir Oliver has succeeded in maintaining a clear space of 50 or 60 yards radius in a dense fog, by means of a single mast, from the summit of which electricity was discharged by a bundle of points and a flame. Such a remarkable result from a mere experiment leads us to hope that further progress will be made, and that at no distant date the London "particular" may become a thing of the past. Be it noted that the space above mentioned is equivalent to a length of 100 to 150 yards of street 60 ft. wide, so that with a dozen such discharging centres, the Strand and Fleet street could be kept clear, even in the present state of the art. Seeing the immense financial loss entailed by a single foggy day in London, the matter is one well worthy of further investigation. It must not be forgotten, of course, that other agencies are at work in the same field; the proposed extended use of anthracite in place of bituminous coal is one of these, and there is still reason to hope that the present wasteful system of individual fires will give way to central heating from a furnace or other appliance in the cellar. Meanwhile, let us by all means see what can be done by electricity.

### DISTRIBUTION OF SEWAGE ON BACTERIA BEDS.

In a paper on this subject, prepared by Dr. J. C. Thresh and Mr. Martin Priest, read and discussed at a recent meeting of the British Institute of Sanitary Engineers, the writers pointed out that it was now generally admitted that in the processes of sewage purification bacterial action was the most important factor with which they had to deal, and that the condition and quality of a sewage effluent would vary according to the different bacterial influences to which the sewage had been subjected. From the point of view of sewage purification, bacteria were divided into two classes, viz., anaërobies and aërobies, the anaërobies producing putrefaction fermentation, while the aërobies produced the true putrefaction, and it was the aërobiotic bacteria that they must

chiefly endeavor to cultivate and employ in their sewage schemes. If bacterial treatment was the main factor in sewage purification, the proper utilization of the bacteria beds was the crux of the whole problem. The best means for the distribution of sewage on bacteria beds were: First, the so-called contact beds, in which the beds are filled with sewage, allowed to stand a certain time, then run off, and the beds allowed to aërate; second, distribution by means of alternating siphons, with or without arrangements for distributing the sewage over the whole surface of the beds; and, third, the continuous, or sprinkler, system. Many installations of the contact system for some reasons had not proved satisfactory. As regards aëration, the contact beds compared very unfavorably with the sprinkler bed, because, while the contact bed is alternately filled and emptied, the continuous, or sprinkler, bed worked under constant aërobiotic conditions, with always an ample supply of oxygen. In conclusion, the writers pointed out that the bacterial system of purification merely improved the sewage from a chemical point of view and left it nearly as impure as before from the bacteriological standpoint, and possibly, therefore, quite as dangerous, so far as disseminating germs of typhoid fever, cholera and other water-borne diseases were concerned. Alderman Gibbons opened the discussion and stated that at Wolverhampton they dealt with an average flow of 2,500,000 gallons every twenty-four hours and at times a much greater quantity. At the corporation sewage farm at Barnhurst they had had a tank working on the bacteria principle for thirty years, and Dr. Frankland, who had visited it, had said that the effluent was as pure as some of the water that was used for domestic purposes in London. Dr. Reid said the Wolverhampton sewage works would compare favorably with any in England, so far as results were concerned. —*Consular Report.*

## SUCCESS.

From the Washington "Star."

A man there was who failed in life,
And he awoke to find
A lull in all the stir and strife,
For he was left behind;
And friends, though some were stanch and true,
Seemed of a sudden strangely few.

Another hurried on so fast
That none could match his pace;
He toiled until he found at last
The farthest, topmost place;
And when he sought for rest and cheer—
He sighed, "In sooth, 'tis lonely here!"

And he who did from day to day
His duty as he could,
Found comradeship along the way,
And life was sweet and good.
Though sometimes touched by envy grim,
He knew not how these envied him.

## RECENT SANITARY PATENTS.

730956.—Aerial Device; Charles A. Needham, New York, N. Y.

731032.—Garbage Crematory; James A. Forsyth, Atlanta, Ga.

731319.—Sanitary Tent; Syrenus A. McIntyre, Colorado Springs, Colo.

731340.—Disinfectant; George Chism, Carrollton, Ill.

731346.—Water Purifier; Eloi Delmouly, Paris, France.

733748.—Sewer, Gas and Backwater Trap and Tide and Flushing Gate; Frank W. Rathbun, San Francisco, Cal.

732740.—Exercising Apparatus; Hans M. Hansen, Quincy, Mass.

732756.—Gas Purifier; Ernest F. Lloyd, Detroit, Mich.

732897.—Apparatus for Massaging; Graziano Sartori, Berlin, Germany.

733120.—Sanitary Napkin Holder; Frederick M. Baldwin, Winterpark, Fla.

734229.—Fumigating and Disinfecting Device; George F. Hardinge, Vineland, N. J.

734252.—Lung Exercising Apparatus; Paul von Boeckmann, New York, N. Y.

736946.—Apparatus for Disposing of Foul Gases; Eugene R. Edson, Cleveland, Ohio.

737008.—Lung and Voice Developer; Peter E. Nichols, Toronto, Canada.

737258.—Catamenial Sack; Lee H. Mallalieu and Mildred Coke, St. Louis, Mo.

737413.—Formaldehyde Generator; Robert W. Johnson, New Brunswick, N. J.

737415.—Filtering Apparatus; James P. Keane, Cincinnati, Ohio.

737465.—Massage Machine; Charles Pfanschmidt and John Siefert, Chicago, Ill.

12150.—Formaldehyde Lamp; Richard P. Kuhn, Alexandria, Va.

737591.—Sanitary Face Shield; Ellen Dempsey, Albany, N. Y.

737889.—Exercising Apparatus; George Yoerger, Brooklyn, N. Y.

739809.—Filter; Chas. A. Baker, Newark, N. J.

740413.—Plumbers' Sanitary Cross; John L. Fruin, New York, N. Y.

740424.—Process of Producing Compounds for Disinfecting Purposes; Robert G. Groppler, Berlin, Germany.

740586.—Toothpick; Johan A. Ohlsson, Brooklyn, N. Y.

740714.—Apparatus for the Medication of Air; John Titus, Oyster Bay, and Wm. Titus, Old Westbury, N. Y.

740853.—Device for Closing Pedal Opening in Pianos, Pianofortes, etc.; Eduard Hilger, Aix-la-Chapelle, Germany.

741055.—Filtering Apparatus; Jos. Miller, New York, N. Y.

741173.—Sanitary Urinal; John Seidel, Milwaukee, Wis.

741228—Anti-Fouling Coating; Geo. D. Coleman, Boston Mass.

741350.—Gas Purifier Box; Ernest F. Lloyd, Fort Wayne, Ind.

741492.—Toy for Expanding the Lungs; Olaf Henrichsen, New York, N. Y.

741623.—Electric Shoes; John S. Busky, Jr., New York, N. Y.

# EDITOR'S TABLE.

SANITARIAN, JANUARY, 1904.

**All Communications, business and otherwise, all exchanges and all publications for review should be addressed to the Editor, Dr. A. N. Bell, 337 Clinton Street, Brooklyn, N. Y.**

## NEW YORK CITY TENEMENT-HOUSES.

Robert W. de Forest, Esq., the Tenement-House Commissioner of New York City, transmitted to Mayor Low a few weeks ago the first report of New York's new Tenement-House Department. In it he says:

"On January 1st, 1902, a new Department of the City Government, known as the Tenement-House Department, was created. Since that time all the tenement-houses in New York have been examined and their condition ascertained.

"Tenement conditions in many instances have been found to be so bad as to be indescribable in print; vile privies and privy sinks; foul cellars full of rubbish, in many cases of garbage and decomposing fecal matter; dilapidated and dangerous stairs; plumbing pipes containing large holes emitting sewer gas throughout the houses; rooms so dark that one cannot see the people in them; cellars occupied as sleeping places; dangerous bakeries without proper protection in case of fire; pigs, goats, horses and other animals kept in cellars; dangerous old fire-traps without fire escapes; disease-breeding rags and junk stored in tenement-houses; halls kept dark at night, endangering the lives and safety of the occupants; buildings without adequate water supply—the list might be added to almost indefinitely.

"The cleansing of the Augean stables was a small task compared to the cleansing of New York's 82,000 tenement-houses occupied by nearly three millions of people representing every nationality and every degree in the social scale.

"The task that confronted the Department was not, however, limited to this. Without organization, without employees, with all its problems before it, it was on the very day that it came into existence confronted with an organized and vigorous attack in the Legislature upon the fundamental principles of the law for whose enforcement it was created.

"Without previous records, with almost no information in re-

gard to the condition of the existing tenement-houses, it was called upon to carry out an important and far-reaching scheme for their improvement, involving the structural alteration of over 40,000 buildings.

"In the period under consideration in this report a new branch of the City Government has been organized, its machinery created, and a force of about 400 employees trained, disciplined and educated; far-reaching and important advances in legislation have been secured as a result of the Department's action, and radical and vicious attempts to break down the tenement laws defeated.

"Living accommodations for 16,768 families, or 83,840 persons, have been provided in sanitary, comfortable and decent houses, each one of which has been built according to law; notorious evasion of and non-compliance with the laws has given place to their complete, uniform and impartial enforcement; the evil of prostitution has been practically abolished in the tenement-houses; 337,246 inspections have been made; 55,055 violations filed; 21,584 repairs made to plumbing; 13,617 water-closets cleaned; 11,611 accumulations of filth removed from cellars and other parts of such buildings; 13,732 ceilings cleaned; 15,364 walls cleaned; 10,060 unsafe wooden floors removed from iron fire-escapes and new iron floors substituted; 1,701 fire-escapes erected on buildings that before were without this protection.

"The registration of 44,500 owners' names has been secured, thus fixing the responsibility for bad conditions in the tenements; contagious disease has been checked and prevented; 32,825 citizens' complaints have been investigated and the conditions complained of remedied; and an important tabulation and presentation of the population in every tenement-house block in the Borough of Manhattan has been prepared that will be of incalculable value to the city.

"The existing tenement-houses have been frequently and systematically inspected; foul cellars have had the accumulated filth of years removed; defective and unsanitary plumbing which has apparently existed for long periods has been remedied; houses unfit for human habitation vacated; hundreds of houses have been radically reconstructed and improved; light has been let into dark rooms; vile yard privies and privy sinks have been removed, and the whole sanitary condition of the city raised to a higher standard. The results of this work are clearly reflected in the reduced death rate, which in 1902 was 18.7, as compared with 20.0 in 1901, and in the first eight months of 1903 has been reduced to 18.0.

"To those who have borne the burden of the organization of the new department what has been done seems but a beginning—a first step in the endless fight against disease and death."

The report is the most comprehensive report on this subject that has ever been made by a city department, and will shortly be printed, in two volumes of about 1,000 pages. It will contain many photographs, plans, and other illustrations. One of the leading features of the report is a series of colored maps, showing population, density of population, and the nationality and the number of families living in each block throughout the tenement districts of the Borough of Manhattan.

The report includes, among other subjects, the following: Houses Unfit for Habitation, Citizens' Complaints, Periodic Inspections, Contagious Disease Inspections, Neglected Houses, Disease Houses, Condemnation of Rear Tenements, Municipal Tenements, Janitors, The Structural Improvement of the Old Houses, Privy Sinks, Dark Rooms, Fire-escapes, Prostitution, The New Law Tenement, Damp-proofing, The Enforcement of the Law in New Buildings, Legislation, Opposition to the Department and Law, The Relation of the Department to the Public, The Registration of Owners' Names, Co-operation with Other Departments, Employees, Corruption Checked, Inspector's Equipment, Women Inspectors, Departmental Instructions, Organization of the Department, Plumbing, Cellar Rooms, Bakeries, Rentals and Vacancies.

### WARFARE ON MOSQUITOES.

The convention to devise and perfect means for suppressing mosquitoes, called by Governor Murphy, of New Jersey, was held in the rooms of the Board of Trade and Transportation, New York, December 16, 1903, and was attended by about forty persons identified with the movement. Governor Murphy was unavoidably absent. Robert W. de Forest, of the Charity Organization Society and president of the Tenement-House Commission, was chosen permanent president, H. Clay Weeks, secretary, and W. J. Mattheson, treasurer.

Papers were read and addresses made by more than a dozen men who, as one of them put it, "had given their blood for the cause." Although the discussion embraced mosquitoes of many different kinds and degrees of wickedness, the batteries of the experts were concentrated, for the most part, on the malarial mosquito, whose criminal alias is "Anopheles punctipennis." The

identity of this species may be established by the extraordinary length of his hind legs, which enables him to repose at right angles on a vertical wall. The common house mosquito (culex pipiens) was declared to be a troublesome "bird," but much less dangerous than anopheles.

Resolutions were adopted recommending that a provisional committee be appointed by the convention to consider the formation of a central organization of national character, with which local bodies might co-operate in conducting a gigantic mosquito crusade.

### VACCINATION LAW UPHELD.

*Constitutionality of Statute Enforced in Case of School Children Affirmed by Appellate Division.*

The Appellate Division of the Supreme Court for the Second Department, State of New York, sitting in Brooklyn, handed down a decision November 2, upholding the constitutionality of the statute enforcing the vaccination of school children.

The decision was given by the court in the case of Edmund C. Viemeister, of the Borough of Queens, who sought to compel the Board of Education and J. H. Meade, principal of Public School No. 12, in Queens, to admit his child to school, admission having been denied because the child had not been vaccinated. It was urged on behalf of Viemeister that the statute was void, being contrary to the provisions of the Constitution.

In the prevailing opinion Justice Woodward declares that the statute does not violate the Constitution, as it operates equally upon every person who is or may desire to become a pupil in the public schools, and affords protection to all, and adds:

"However willing we might be to agree with the appellant that the practice of vaccination is attended with dangers, and that its efficacy is a matter of uncertainty, these are matters which should be properly addressed to the consideration of the Legislative Department rather than to the courts."

Justice Hirschberg also wrote an opinion sustaining the statute, declaring that it constituted a legitimate exercise of the police power.

### TO SAVE LIFE AND LIMB.

If American railroad companies and mine owners and manufacturers would provide adequate safeguards for their employees, say the leaders of the movement for a museum of security ("New York Times," Dec. 8), the fatal accidents befalling such employees would be decreased more than 50 per cent. annually. It is with a

view of establishing this museum, filled with models of safety appliances, that the American Institute of Social Service is holding a series of evening meetings, the first of which was addressed last night by Dr. Josiah Strong and Dr. William H. Tolman in the Institute's rooms at 105 East Twenty-second street.

"During the last five years," said Dr. Strong, "there have been 38,890 killed on the railways of the United States. The injured in the same time have numbered 253,823. So the daily average of killed has been 21 and of injured 139. From these statistics it is seen that there are in this country to-day 51,882 persons who are condemned to death, to be executed on the railroads, within the next five years, taking into consideration the increase in travel. And you must remember that thousands of others are being killed in mines, factories, and building operations. John Mitchell tells us that two men die of injuries in the Pennsylvania anthracite mines every day.

"The Association of Industrialists in France is doing something in the line we urge, and there are several museums of security on the Continent. What we want here are working models of all safety appliances."

Dr. Strong quoted statistics to show that German and Austrian employees had profited much from the museums, and in Germany during a given period the fatalities numbered proportionately only one-fifth of those in America, while in Austria the proportion was even smaller.

He explained that the museum would contain not only models of devices to prevent accidents, but also exhibits of means to improve hygienic conditions.

Dr. Tolman's talk was accompanied by a stereopticon display. One picture showed a screen arrangement for catching any displaced belt in a factory. Another model was that of an apparatus to prevent truckmen from breaking their legs while loading barrels.

Pictures from the Charlottenburg Museum, near Berlin, for which hundreds of thousands of dollars were appropriated by the Reichstag, were shown. Among the models there were those of all sorts of hygienic clothes for men and women.

### "HOW A PULLMAN CAR IS CLEANED."

Anent the unsanitary condition of sleeping-cars, described by Dr. McCormack at the recent meeting of the American Public Health Association (December SANITARIAN, p. 494), the manage-

ment of the Pullman Company has sent out this statement ("The Sun") of just what the process of cleaning a Pullman car is: "As soon as a Pullman car arrives at its destination it is entirely stripped, the carpets are beaten and aired and the interior of the car is thoroughly scrubbed with soap and water. The blankets are taken out of the car and are thoroughly blown out with compressed air at a ninety-pound pressure. It is impracticable to wash them after every trip, but they go to the laundry several times a year, which is oftener than is the case with hotel blankets. All linen is renewed each trip. Every case of sickness in a car, however trivial, is followed by the antiseptic cleansing of the section occupied by the sick person, and the entire car is sprayed with formaldehyde. As a further sanitary precaution, in the newer cars of the company, purely decorative draperies are being omitted, and the necessary ones, such as berth curtains, are being made of a lighter material which does not hold dust or odors."

On seeing this account of how the dangerous dust is scattered, instead of being destroyed, we inquired of Messrs. Pyle & Sons, of New York, whether *pearline* could be used for washing such material without danger to texture or color. They assure us that anything which can be subjected to clean warm water without injury of texture or color may be thoroughly cleansed by the use of pearline.

INTERNATIONAL CONGRESS ON TUBERCULOSIS.

Attention is invited to the announcement of this Congress on other pages. It is one of several congresses on the subject in process of organization announced for 1904 and 1905.

Dr. S. A. Knapp, of New York, in a letter published in several medical journals recently, has taken occasion to express his "deep anxiety" lest "The Bell Congress," as he presumes to designate the International Congress to be held in St. Louis next year, as at present organized, be over-exalted. "Because," he says, "it owes its inception to Mr. Clark Bell, it has, to my (*his*) knowledge, not the support of our best known men in the field of clinical medicine, hygiene, tuberculosis pathology, or tuberculotherapeutics" ("Medical Record," Dec. 5). Therefore he suggests and hopes for a reversal of the purpose and plan of the organization—to make it a mere medical congress, composed of clinicians and therapeutists—instead of public-spirited men of all professions *intent upon efforts for the prevention of tuberculosis,* for which purpose the Congress has been organized.

### MONUMENT TO SERVETUS.

It is curious to think of a monument to Servetus in Geneva, but one was recently unveiled there ("American Architect"), with appropriate ceremonies, under the auspices of the Calvinist churchmen of the city. It is fair to say that Calvin, instead of tying up Servetus in his study, and privately incinerating him, as is popularly believed, simply carried out what he thought to be his duty, as the autocrat of Geneva, in sanctioning the execution of a sentence already pronounced by the lawful authority. In these days, when heresy is no longer cognizable by the criminal law, the great and good Calvin would probably be the first to rejoice at being relieved of the necessity for participating in a judicial execution, and it is as an expiation for the intolerance of the age in which he lived, rather than for personal or local intolerances, that the monument has been erected by the faithful disciples of the reformer. Some one with a taste for research might, by the way, write an interesting treatise on expiatory monuments, which are becoming sufficiently numerous to warrant special consideration. The best known one is, of course, the Chapelle Expiatore, in Paris, erected over the place of interment of Louis XVI and Marie Antoinette, which has a curious history, and next comes, perhaps, the monument to Admiral Coligny, murdered on the night of Saint Bartholomew, in front of the Oratoire, near the spot where he fell under the swords of the Catholic mob. This last is, perhaps, hardly an expiatory monument, since it was erected to a Protestant, and is attached to a Protestant church; but it is, at least, a monument to toleration, and the distance between toleration and expiation is not great.

### WHY A SHIP IS CALLED "SHE."

No wonder a ship is called "she." She has shifts, stays, an apron, hooks and eyes, pins, caps and ribbons, hoods, poppets, and a husband. Then, too, the rigging costs more than the hull (whole).—H. S. L., New York Times, Dec. 18, 1903.

---

ADJUTANT-GENERAL BELL, of Colorado, says: "Armed or unarmed resistance by citizens of the United States against the lawful movements of the militia is treason and the punishment is death." That seems to have the true ring. It might be well if more militia commanders were made of Bell mettle.

## MORTALITY AND MORBIDITY REPORTS AND REVIEWS.

HEALTH OF THE NAVY.—Report of the Surgeon-General, Chief of the Bureau of Medicine and Surgery, for the calendar year 1902:

The average strength of the active list was 31,240, an increase of 4,367 over the previous year. Complete returns were received by the Medical Department from a force of 30,249, the difference, 991, representing crews of small vessels not provided with medical officers, and officers and men on leave, or on special and detached duty at places from which medical returns in detail are not received. As reports of death are received from the total force, the figures representing that strength are used in computing ratios of death, while all other ratios are based upon the number shown by the returns of the Medical Department. Admissions to the sick list for all causes was 22,645, the ratio per 1,000 of strength being 767.63, as compared with a ratio of 766.75 for the previous year and 801.44 for the seven preceding years. There were 18,882 admissions for disease and 3,763 for injury, giving ratios of 640.07 and 125.56. The corresponding ratios for the year 1901 were 652.96 and 113.78. The daily average of patients was 1,025.93, and the ratio per 1,000 of strength 34.77, the corresponding data for the previous year being 887.21 and 33.99. The total number of sick days was 374,466, or an average of 12.05 sick days for each man in the Navy and Marine Corps, with an average duration of 16.53 days' treatment for each case. During 1901 the average number of sick days was 12.40, and the average duration of treatment per case was 16.12.

The number of persons invalided from the service (including retirements of officers for disability and transfers to hospitals for the insane) was 1,144, giving a ratio of 37.81 per 1,000 of strength. The corresponding figures for the year 1901 were 1,003 and 37.32, respectively. The ratio for the year 1902 is considerably higher than the average ratio for the period of the seven preceding years —26.17—due, no doubt, to the large number of recruits now being received to fill up the increased complement of the Navy and Marine Corps. The discharges for disability were divided into 1,001 for disease and 143 for injury, with ratios per 1,000 of strength of 33.09 and 4.72, respectively. The corresponding fig-

ures for 1901 were 875 and 128, respectively, with ratios of 32.56 and 4.76.

Deaths during the year, 211, the mortality per 1,000 of strength being 4.13 for disease and 2.62 for injury; total, 6.75. This ratio (6.75), while slightly higher than that of the previous year (6.18), is still less than the average for the seven preceding years. Twelve deaths from starvation (occurring during the campaign in Samar, in the marine department) and 6 from cholera are unusual causes that swell the death list for this year.

Among the causes of admission to the sick list, malarial diseases stand first with 1,408 admissions, wounds ranking second with 942 admissions, while epidemic catarrh, which has headed the list for the two preceding years, falls to third place, with 877 admissions. Dengue fever adds 531 admissions to malarial affections. Rheumatic and diarrheal affections rank next in prevalence with 799 and 783 admissions, respectively. Epidemic diseases increased somewhat over 1901, the admissions for the most prevalent being 681 for 1902 to 527 for 1901. The number of admissions for mumps and measles was almost twice as great as for 1901, while the admissions for diphtheria and rubella are considerably less. The admissions for smallpox are practically the same. The admissions for the epidemic diseases are: Mumps, 330; measles, 245; diphtheria, 65; rubella, 48; smallpox, 23.

Venereal diseases still cause a decided loss of efficiency, the total admissions for the year being somewhat greater than for 1901. Alcoholism also accounts for an increase in admissions. The detailed figures are: Gonorrhea, 771; syphilis, 606; chancroid, 284; alcoholism, 248.

The total admissions for injuries of various character were 2,940, being divided among wounds, 942; contusions, 706; sprains, 612; fractures, 242; hernia, 175; burns, 171; luxations, 65; drowning, 27.

The admissions for pulmonary diseases show a decrease from 1901, there being 158 admissions for pneumonia in 1902 to 185 for 1901, and 130 for pulmonary tuberculosis in 1902 to 125 in 1901. The average for organic diseases shows a decided increase; 190 admissions for heart disease during the year to 105 during 1901, and 46 admissions for nephritis to 25 for 1901.

Diarrheal affections and dysentery are still prevalent, as is typhoid fever to a less degree, the admissions being: Diarrheal affections, 783; dysentery, 176; typhoid fever, 125; the total of these, 1,084, being an increase of 135 over the admissions for 1901. Among

admissions for causes of an unusual nature are to be noted cholera (Asiatic), 11 cases, with 6 deaths; and starvation, 42 cases, with 12 deaths; all occurred in the Philippine Islands.

Upon comparing these returns with those of the previous year it appears that there has been a decided increase in the number of cases treated for malarial affections, mumps, and measles, while the other diseases prevalent in the service remain at about the same average when compared with the total strength of the force employed. The small actual increase in figures can well be attributed to the increase in the complement of the Navy and Marine Corps during the year.

*Insane.*—The number of patients in the Government Hospital for the Insane on June 30, 1902, 130; admitted during the fiscal year ending June 30, 1903, 44; total, 174; discharged during the fiscal year ending June 30, 1903: 14 recovered, 10 died, 1 improved—25. Remaining, June 30, 1903, 11 officers, 138 enlisted men.

*Naval Hospitals.*—Cases met with in the hospitals appear, as a rule, in the returns from ten stations where the disease or injury occurred. Summed up:

| | |
|---|---|
| Remaining from last year | 436 |
| Admitted | 586 |
| Readmitted | 4,616 |
| Discharged to duty | 3,791 |
| Invalided— | |
| To hospital | 286 |
| From service | 715 |
| On leave | 42 |
| To Hospital for Insane | 38 |
| Deserted | 47 |
| Died | 85 |
| Continued to next year | 634 |
| Total number of sick days | 308,096 |

*Special diseases* in the order of their greater prevalence:

| | | | |
|---|---|---|---|
| Malarial | 1,403 | Contusions | 706 |
| Wounds | 942 | Sprains | 612 |
| Epidemic catarrh | 877 | Syphilis | 606 |
| Rheumatic affections | 799 | Dengue | 531 |
| Diarrheal affections | 783 | Mumps | 330 |
| Gonorrhea | 771 | Chancroid | 284 |

| | | | |
|---|---|---|---|
| Alcoholism | 248 | Typhoid fever | 125 |
| Measles | 245 | Heat stroke | 95 |
| Fractures | 242 | Diphtheria | 65 |
| Heart disease | 190 | Luxations | 65 |
| Dysentery | 176 | Rubella | 48 |
| Hernia | 175 | Nephritis | 46 |
| Burns | 171 | Drowning | 27 |
| Pneumonia | 158 | Smallpox | 23 |
| Pulmonary tuberculosis | 130 | | |

### *Quarters for Sick on Shipboard.*

The Department's order of April 17, 1902, directing that plans for sick quarters of all vessels under construction and undergoing extensive repairs be submitted to this Bureau for review and recommendation, has resulted in many improvements in the arrangement and construction of sick quarters on board the latest vessels completed and those whose plans have been prepared. Operating rooms, modeled on the most advanced ideas of aseptic surgery, have been provided on the largest battleships and cruisers, isolation compartments have been planned, and sick bays of a capacity proportional to the number of the crew to be cared for have been established. An improvement in the situation of sick quarters has also been brought about through the Bureau's recommendations on these matters. The old idea of placing the sick bay in the bows of the ship—the least advantageous place on a vessel for the treatment of those in need of quiet and repose—has been in a large measure laid aside. Another good result of the Department's action in this connection is, that by securing a uniformity of sick quarters, the Bureau has been able to provide uniform equipments in advance of the completion of the vessel, and has been enabled to allow it much more satisfactory outfit than would otherwise be possible.

### *Hospital Ships.*

The history of the evolution of naval affairs in the past year furnishes many instances in which the need of hospital ships has been demonstrated. This need has been particularly brought to the front by the Department's policy of carrying on extensive drill operations, as inaugurated in the maneuvers of the combined fleets of the North Atlantic, South Atlantic, and European stations last winter in the waters of the West Indies. The Admiral of the Navy, in his report covering these operations, states that for a fleet and base having together a force of 10,000 men there

should be associated with the base, among other provisions, a hospital ship. The fleet surgeon of the European squadron, who was the senior medical officer of the combined fleets, brings out forcibly in his sanitary report the need of, and the advantages to be gained from, the services of hospital ships in peace maneuvers.

The fleet surgeon of the North Atlantic Station is equally convinced of the value of this method of solving the problem of the care of the sick of the force afloat. The senior medical officers of the Alabama and of the naval station, San Juan, P. R., add their testimony to the same purport in their reports, drawing their opinion from the lesson of the winter's work. Over 150 of the men engaged in these operations would have been transferred to a hospital ship if one had been available, and this number does not take into consideration the large number of the crew of the Panther, badly infected with malaria from their service on the Isthmus. This vessel was so crippled from sickness that her services were lost to the drills, as it was imperative that she be taken north to land the sick of her force for treatment at a naval hospital. It is believed that this would not have been necessary if a hospital ship had been within reach, to which the infected members of her crew could have been transferred.

### *Naval Medical School.*

The first session of the medical school organized under Department's order of May 27, 1902, for the instruction and training of newly appointed medical officers in professional branches peculiar to naval requirements and in the methods of naval work as applied to their profession and in general, was completed April 4, 1903, by the graduation of the first class of twelve members.

The need of a preliminary course of instruction for the novitiate of the Medical Corps before taking up active duty was fully demonstrated in the class work, and already, in the few months since graduation that the members of the class have been actively employed, the value of this school training has been practically brought to the front.

With the completion of the new naval hospital on the grounds of the Museum of Hygiene and Medical School, provided for by action of Congress, largely increased facilities will be added to the school for practical instruction. The Bureau anticipates that during the next six years it will be possible to assemble a class of from 25 to 40 members at each session, and the outlook is most promising for furnishing the service with well-trained and

equipped medical officers to fill the corps up to the complement authorized by the Fifty-seventh Congress.

The wisdom of the establishment of the school in Washington has been satisfactorily demonstrated. The building of the Museum of Hygiene has, with some slight remodeling, proved peculiarly suited for school purposes. The laboratories are well situated and are modeled and equipped to equal any modern establishment of their class. The lecture-room and other divisions of the school building are ample in size for the purposes of the school, without any encroachment on the space used for the museum proper. In order to provide for the large number of the next class, made possible by the increase in the medical corps authorized by the last Congress, it will be necessary to make some additions to one wing of the building for the purpose of providing study and dressing-rooms, and some increase in the equipment will be necessary.

*Changes in the Personnel of the Medical Corps.*

In order to meet the urgent need of the service for medical officers, and to provide for the future, Congress at its last session authorized an increase of 150 numbers in the Medical Corps, 25 of which are to be appointed each calendar year. At the same time, by a wise distribution of this increase among the different grades, and a rearrangement of rank whereby rank for grade was established, it placed the Bureau in position to successfully compete with other Government services in attracting properly qualified physicians to the naval service.

Since the passage of the law, up to the end of the fiscal year 1903, 16 applicants have been successful in meeting the requirements of the examining boards, filling the vacancies caused by deaths, resignations, and retirements, and leaving 11 vacancies under the provisions of the new law. It is hoped that these 11 vacancies will be filled before the end of the calendar year. This is unprecedented in the history of the Medical Corps of the Navy, which has heretofore filled with difficulty the usual vacancies resulting from retirements and casualties.

*Titles of Officers of the Medical Corps.*

A dissatisfaction has existed for a long time among the members of the Medical Corps in regard to the titles which are given them in the different grades of the corps. The present titles convey no meaning as to military rank or importance of duty, and embarrassment is often the result when medical officers of the navy are brought in contact with their fellows in civil life or other

military services. Moreover, these titles are in a sense somewhat derogatory to the dignity of the office they represent, as, for example, "assistant surgeon" as applied to a professional man of 30 or more years who may be in charge of a department. The term "passed assistant surgeon" was originally applied to an assistant surgeon who had passed his examination for the grade of surgeon and was awaiting a vacancy, and no commission was issued in this grade. By time and custom it became fixed into a grade, and latterly a law was passed which completed its establishment as such. To most naval medical men it is distasteful to subordinate the professional title to the military one, but it is fully recognized, on the other hand, that a title which designates both the rank and grade is desirable. The Bureau recommends that Congressional action be asked for authority to rename the different grades of the Medical Corps now existing, as follows: In place of Surgeon-General, surgeon-admiral; and in the other grades, medical director to become surgeon-captain; medical inspector, surgeon-commander; surgeon, surgeon lieutenant-commander; passed assistant surgeon, surgeon-lieutenant; and assistant surgeon, surgeon-lieutenant (junior grade).

*Reports on Navy Yards, Shore Stations and Receiving Ships* show them to be, in general, in good sanitary condition. But there are some exceptions. The old barracks building at the Boston Navy Yard continues to be a chronic nuisance, as it has been for many years; with old and badly placed plumbing arrangements, difficult to keep clean and beyond repair. At the navy yard at Cavite, P. I., cholera, dengue and dysentery were epidemic during the year.—From March 31 to December 31, 1902, there were at least 300,000 cases of cholera in the Islands, with 275,000 deaths. The exact number of cases of cholera which occurred in the limits of this station cannot be stated. There were about 3,000 employees of the yard. When cases occurred in the yard they were promptly sent to the cholera hospital. At the Marine Sick Quarters dysentery was prevalent and persistent, though not of severe type. Attributed to long-continued service in the tropics.

### *The Naval Academy.*

The total number of sick days for the past year amounted to 3,699 for an average complement of 562. As compared with the previous year, this is a reduction of 330 sick days in favor of this year. The daily average of patients for the year was 10.13, no allowance being made for the four summer months, during which

the upper three classes of midshipmen were away from the academy. Three deaths occurred: 1 from acute endocarditis and septicæmia, 1 from drowning, and 1 from typhoid fever.

In town there have been more cases of typhoid fever this year than heretofore, but on account of the proximity and accessibility of the cities of Washington and Baltimore, in which much typhoid fever exists, it is hard to say what cases were introduced from these cities and what originated here.

There is no filtering plant in connection with the city water, and contamination of the water, which is principally surface water, is at all times possible. All the water used for drinking in the midshipmen's quarters is filtered by a Pasteur filtering system. The bougies are inspected by a medical officer at least once a week during his sanitary inspection. The officers and their families are not thus protected from contaminated water. It is discretionary with them to sterilize their drinking water or not.

The introduction into every house of a small plant for the filtration of the drinking water according to the Pasteur method would involve very small expense and obtain relative security against several infectious diseases.

Now that it is universally recognized as a fact that flies and mosquitoes can be carriers of infection, it becomes necessary to provide for protection against that source of possible infection. All Government houses should have kitchen, pantry, dining-room, and bedroom windows screened against insects. These screens should be just as essential for a Government house as doors or furniture.

*Reports on Cruising Ships* show very considerable improvement in the sanitary requirements during recent years, but there still remain important defects, even in some of the new ships, which should be overcome, *e. g.*, the *Iowa:* "The sick-bay closet has never worked well for more than a week at a time, and should be replaced by a better form, secured to a proper foundation. The medical storeroom is too small, especially now that the outfit has been enlarged, and the quartermaster's storeroom, which is separated from it by a wire partition, should be added to it. The sanitary tank is in a coal bunker and cannot be cleaned when the bunker is full. This tank slowly fills with a deposit of grease and soap, which can only be removed with a chisel and scraper. It is suggested that there might be a small cistern or well substituted, which could be kept empty by a small steam pump constantly working. The pipes from the water tanks run through the fire-

room and ammunition passages, and the water is delivered in the galleys and pantries at a temperature of from 100° to 115° F."

*The Texas.*—"The natural ventilation in most of the living spaces of the crew is good; nothing can be complained of in the cabin or wardroom quarters, and the junior and warrant officers' quarters are fair. The greatest demand for air is in the steering-engine room, the evaporator room, and the firemen's washroom. In these places it is not so much a question of purity as of reduced temperature and quantity. Taking them in order, it may be said that the steering-engine room has a temperature of 110° F. to 115° F. The humidity is so great that there is no evaporation from the body. There are two small louvres but no electric fan. The amount of air supplied or exhausted is so slight as to practically amount to nothing. Those of the crew who are stationed there at sea are exhausted at the end of two hours and dread the duty."

*The Oregon.*—"During the long sea voyages the ship has been required to make it has been necessary to batten down hatches fore and aft, pretty much all the time, and on these occasions the steam-ventilating system has not been equal to the task of properly renewing the air below. There should be an exhaust, as well as a supply system, and the air should be driven by electric fans.—The crew's water-closets, which adjoin the space on the berth deck, where the majority of the men swing, are offensive at sea, in spite of the great care exercised in keeping them clean.

"The ship, below the berth deck, is in good condition, and is satisfactorily ventilated and fairly cool, except the dynamo room, where the temperature ranges between 130° and 145° F. at sea. This matter is under consideration and will no doubt be remedied before the ship goes to sea again.—The sick bay is inadequate in size. It should be large enough to contain 12 folding bunks at least. It has but 4 at present.

"At sea in a temperate climate, when hatches can be opened, and in port, with air ports open as well, the Oregon may be considered fairly satisfactory from a sanitary point of view. She is entirely unsuitable for tropical cruising. Temperatures of 90° and 95° F. are not at all uncommon in the wardroom officers' quarters, while in the warrant officers' quarters and in the men's quarters nearby the temperature has ranged between 100° and 105° F. day and night."

STATE OF NEW YORK.—Monthly Bulletin of the State Department of Health for October, 7,910,000: Total number of deaths,

9,786; annual death rate, 15.0; deaths under 5 years, 2,458; percentage of deaths under 5 years to total deaths, 25.0; deaths at 70 years and over, 1,724; deaths from zymotic diseases per 1,000 deaths from all causes, 123; from cerebrospinal meningitis, 21; typhoid fever, 194; malarial diseases, 12; scarlet fever, 45; measles, 27; erysipelas, 13; whooping-cough, 31; croup and diphtheria, 256; diarrheal diseases, 598; acute respiratory diseases, 968; consumption, 1,038; puerperal diseases, 87; diseases of the digestive system (not acute diarrhea), 617; diseases of the urinary system, 791; diseases of the circulatory system, 1,038; diseases of the nervous system, 1,044; cancer, 456; accidents and violence, 668; old age, 369; not classified, 1,503.

*Smallpox* has existed in few places till recently, and no deaths from it have occurred in the State for several months. With the advent of colder weather it has developed more widely, and in some localities unsuspected prevalence has existed for several weeks. The question has come to the State Department several times of late as to whether an embargo shall be placed against an adjoining town in which smallpox is prevalent. It would no doubt be entirely justifiable so far as the affected town is concerned, in case it is lax in the proper care of its cases, to place guards on the highways and shut off all communication with it. Self-preservation would sometimes seem to require this. But it is not recommended; first, because in certain cases where we have seen it done it has not proved to be effective as a remedial protection. But the chief reason is that it turns the public mind away from a measure of protection which is absolute to the individual and, if general, to the community, *i. e., vaccination.* The public need to have this constantly enforced. There is no other means of protection that has any comparative value.

Save in one direction compulsory vaccination is not on the statute books of this State. It is a law, however, that all unvaccinated persons shall be excluded from the public schools. This law is strictly enforced in many of our municipalities. Its constitutionality has been affirmed by the courts of the State. This has been just recently declared in a notable decision handed down by the Appellate Division of the Supreme Court, so that no question can ever arise as to its legality. The State Department of Health would reaffirm that an unvaccinated person is a menace to the public health; and to have smallpox is a crime against the community.

New York City, 3,732,903. Total number of deaths, 5,123; annual death rate, 16.01: Borough of Manhattan, 1,917,676—

Deaths, 2,708; death rate, 16.6; Borough of the Bronx, 268,341, deaths 393; 17.2; Borough of Brooklyn, 1,219,597, deaths 1,710; 15.6; Borough of Queens, 182,681, deaths 208; 13.0; Borough of Richmond, 72,608, deaths 104; 16.3.

## Record of Deaths by Accident.

Commissioner Greene, of the Police Department, December 4 made public a list of figures regarding the number of deaths in New York City streets during the year 1902, in confutation of figures that, he said, have been published. He said that some papers in this city and throughout the country have published that 535 persons had been killed in the streets during 1902. This, he said, he had found to be excessive. From the reports of the Health Department, the Commissioner had found that only 365 persons were killed. Of this number, the Commissioner said, he wished to point out that 172 were killed by street railway lines. Trucks and wagons had killed 146, while automobiles only killed 9. Bicycles killed 2 and runaway horses killed 7.

CALIFORNIA.—For record of plague in San Francisco for calendar year 1902 see Public Health Reports No. 52, December 26, 1902. A summary of cases since March, 1900, when the first case was officially reported, is as follows: Calendar year 1900, cases, 22; deaths, 22. Calendar year 1901, cases, 30; deaths, 25. Calendar year 1902, cases, 41; deaths, 41. Total cases of plague from January 1 to December 11, 1903, 17. Total cases of plague same period 1902, 41. November, 1903, 4 cases; total to date, 109.

Los Angeles, 135,000.—Health report for November: Deaths, 246—32 under 5 years; death rate, 18.22. From specific infectious diseases, 74; tuberculosis, 51—"4 had lived here less than three months, 5 between two, three and six months, 3 between six and twelve months, 18 between one and five years, 2 between five and ten years, 14 over ten years, 2 life, unknown, 2."

COLORADO.—Denver, 175,000. Report for September: Deaths, 245; premature and still births, 7. Death rate, per annum, 16.80. Deaths from phthisis, 57—56 contracted elsewhere; typhoid fever, 106 cases, 13 deaths; smallpox, 9 cases; chickenpox, 3 cases; diphtheria, 50 cases, 2 deaths; scarlet fever, 24 cases, 5 deaths; measles, 3 cases; whooping-cough, 1 death. Deaths from heart diseases, 12; pneumonia, 9; bronchitis, 3; nephritis, 12; cancer, 8.

CONNECTICUT.—Bulletin for October: Deaths, 1,123; 37 less than in September and 10 less than in October of last year, and 14 more than the average number of deaths in October for the five years preceding. The death rate was 14.4 for the large towns; for the small towns, 13.8; for the whole State, 14.8. Deaths reported from infectious diseases, including diarrhea, 269—23.9 per cent. of the total mortality.

Cases of infectious diseases reported: Smallpox, Putnam, 8; measles, 255 cases in 20 towns; scarlet fever, 103 in 32 towns; diphtheria and croup, 14 in 36 towns; whooping-cough, 94 in 13 towns; typhoid fever, 165 in 38 towns; consumption, 25 in 11 towns.

DISTRICT OF COLUMBIA, 295,103—90,353 colored. Report for the week ended December 5: Deaths, 112—29 under 5 years; one more than in the previous week and 14 more than during the corresponding period of last year; 68 were white and 44 colored. Death rates, 17.3 for the whites, 25.3 for the colored, and 19.7 for the entire population; 18.3 for white, 22.4 for colored, and 19.6 for entire population were the death rates for the previous week, and 13.8, 24.3, and 17.1, respectively, were the rates for the corresponding period of 1902. The prevailing causes of death were: pneumonia, 15; diseases of heart, 13; consumption, 12; malignant growths, 9; diseases of the kidneys, 8; and apoplexy, 5. There were 5 accidental deaths—4 from burns and scalds and 1 from railroad accident.

Cases of typhoid fever continue to diminish, there being 16 reported and 30 discharged, leaving on hand at the close of the week 114, as against 289 at the corresponding period of last year. Of diphtheria, 3 new cases were reported and 2 were discharged, which increased the number under treatment to 19 in all, confined to 17 premises. Scarlet fever also was increased by 3 cases, there having been 7 new cases reported and 4 discharged, making a total of 37 under observation in 26 premises.—Smallpox, no new cases, 2 cases in hospital.

INDIANA State Board of Health bulletin, October, as compared with September.—Typhoid fever is the most prevalent disease, 78 counties reporting the disease present, and deaths were reported from 64 counties. It was also the most prevalent malady last month. Rheumatism was reported as second in area of prevalence, while diarrhea occupied this position last month, but it has

fallen this month to seventh place. The order of prevalence was: Typhoid fever, rheumatism, intermittent fever, bronchitis, tonsillitis, scarlet fever, diarrhea, diphtheria and croup, pneumonia, influenza, pleuritis, erysipelas, measles, dysentery, cholera morbus, inflammation of bowels, whooping-cough, cholera infantum, cerebrospinal meningitis.

*Smallpox.*—324 cases and 1 death in 38 counties. This is a decided increase in the number of cases and area as compared with the preceding month, but a decrease so far as deaths are concerned. In the corresponding month last year 298 cases were reported, with 19 deaths, in 35 counties. We have, therefore, to record an increase as far as cases and area is concerned, but a decided decrease in regard to deaths.

The total number of deaths from all causes reported was 2,573, a rate of 12. The city death rate was 15.4, and the country death rate was 10.3. Tuberculosis claimed 256 victims, the rate being 120 per 100,000. The city rate for this disease was 154, and the country rate 102.4. Typhoid fever, 160; diphtheria, 63; pneumonia, 132; influenza, 8; cerebrospinal meningitis, 25; puerperal septicæmia, 10; cancer, 105; violence, 146.

IOWA.—State Board of Health Bulletin for November reports outbreaks of infectious diseases for the preceding month: Chickenpox in Des Moines; diphtheria in 8 localities; measles in 2; scarlet fever in 13; typhoid fever in 2; smallpox, 11 cases in 6 localities.

We have received a large number of letters from Arlington and vicinity relative to an epidemic of smallpox there. One party reported 66 cases. The schools have been closed, public gatherings prohibited and business more or less demoralized. The burden of the correspondence is whether quarantine may not be "raised" at an earlier date than that prescribed by the Board. From outside sources where persons have gone from Arlington and taken down with smallpox it is alleged that quarantine is but indifferently enforced and that the disease is called "Cuban itch."

Later.—A letter from Mayor Osborn states that the doctors did recognize the disease as smallpox and so reported it, and that it was promptly quarantined. The cause of its wide spread is to be accounted for.

"It is evident that the above does not fairly represent the actual number of outbreaks that have occurred throughout the State, as there must be many such outbreaks that are not reported to the

Secretary. Every such report is carefully registered by the Secretary and published in the *Bulletin.*"

ILLINOIS.—Statement of mortality for the month of November, 1903, compared with the preceding month and with the corresponding month of 1902. Death rates computed on estimated mid-year populations of 1,885,000 for 1903 and of 1,820,000 for 1902:

| | Nov., 1903. | Oct., 1903. | Nov., 1902. |
|---|---|---|---|
| Total deaths, all causes | 2,124 | 1,962 | 2,008 |
| Annual death rate per 1,000 | 13.71 | 12.25 | 13.41 |
| Under 1 year | 335 | 356 | 338 |
| Between 1 and 5 years | 180 | 180 | 264 |
| Over 60 years | 448 | 391 | 385 |
| Principal causes of death— | | | |
| Acute intestinal diseases | 96 | 171 | 120 |
| Apoplexy | 60 | 49 | 52 |
| Bright's disease | 148 | 145 | 114 |
| Bronchitis | 64 | 40 | 84 |
| Consumption | 192 | 220 | 185 |
| Cancer | 85 | 99 | 93 |
| Convulsions | 47 | 34 | 52 |
| Diphtheria | 80 | 76 | 82 |
| Heart diseases | 180 | 161 | 151 |
| Nervous diseases | 120 | 99 | 92 |
| Pneumonia | 333 | 195 | 267 |
| Scarlet fever | 16 | 11 | 20 |
| Suicide | 40 | 41 | 40 |
| Typhoid fever | 56 | 45 | 72 |
| Violence (other than suicide) | 125 | 132 | 119 |

KENTUCKY.—Annual report of the Health Department of Louisville for the fiscal year ending August 31, 1903: Our population is now estimated at 225,053, of which 182,293 are white and 42,760 are colored. Total deaths for the year was 3,782. Of this number 2,722 occurred in the white and 1,060 in the colored population. Using these figures as a basis of calculation, it will be observed that our total death rate for the past year was 16.8 per 1,000 inhabitants. The death rate as occurring in the white population was 14.9, while it was 24.78 in the colored population. "I have accounted for the high death rate in our colored popula-

tion," says the health officer, "by reason that this class of people are improvident, ignorant, uncleanly in person, and indifferent to hygienic precautions. Many of them have inherited tendencies to scrofulous and tubercular diseases. It is not surprising, then, that the death rate is much greater in the colored population than in the white. The death rate, in so far as the general prevailing diseases are concerned, varies but little from that of previous years. Consumption, as usual, was the cause of the greatest number of deaths—11 per cent. of the total mortality.

"While it is true that during the past three decades the mortality rate from this disease has constantly and considerably decreased in the United States, falling from 33 per 10,000 of population in 1871, to about 20 per 10,000 at the present time, yet this percentage of deaths from one disease alone is entirely out of proportion to what it should or would be if only the ordinary precautions for the prevention of the disease, which are known to be scientific and effectual, were exercised.

"A matter which is worthy of consideration in reference to the prevalence of consumption is the high death rate occurring from this disease in the colored race, there being at least one hundred per cent. more deaths among this class of people than occurs in the white race. In this city, where much of the domestic help is colored, is it not perfectly possible that families are endangered to a great degree from this fact? I have frequently given reasons why the general negro mortality is greater than the white. Very little is being made in this city to stay the spread of consumption. While we have an "Expectoration Ordinance," yet it is not observed as it should be, and its provisions are inadequate."

Deaths from other diseases in the order of their greater prevalence: Heart disease, 329; pneumonia, 293; inanition, 184; Bright's disease, 181; typhoid fever, 157; entero-colitis, 145; cancer, 134; apoplexy, 121; meningitis, 101; paralysis, 98; bronchitis, 96; infantile convulsions, 80; asthma, 67; diphtheria, 57; gastritis, 57; peritonitis, 56; dysentery, 38; septic diseases, 38; nephritis, 36; marasmus (infantile), 32; obstruction of the bowels, 31; cirrhosis of liver, 30.

LOUISIANA.—New Orleans, 310,000—77,714 colored. Report for November: Total deaths, 618—356 colored. Under 5 years, 70 white, 53 colored. Death rates: white, 19.13; colored, 37.01: 23.92. Deaths from typhoid fever, 2; intermittent fever and malarial cachexia, 10; consumption, white, 42, colored, 43; cancer,

white, 17, colored, 6; organic heart diseases, 32 white, 29 colored; Bright's disease, white, 31, colored, 18.

MICHIGAN.—The Secretary of the State Board reports for four weeks, ending November 28, compared with the average for November in the 10 years, 1893-1902, smallpox was more than usually prevalent; and intermittent fever, erysipelas, inflammation of bowels, remittent fever, cholera morbus, whooping cough, measles and cholera infantum were less than usually prevalent. The diseases which usually cause the most sickness in Michigan at this time of the year were slightly less prevalent in the November just passed than the average for November in the preceding ten years.

Of the most dangerous communicable diseases, meningitis was reported present at 4 places; whooping cough at 16 places; measles at 31 places; smallpox at 53 places; diphtheria at 80 places; scarlet fever at 122 places; typhoid fever at 154 places; and consumption at 193 places. Reports from all sources show meningitis reported present at 4 places less; whooping cough at 3 places less; measles at 10 places more; smallpox at 11 places more; diphtheria at 3 places less; scarlet fever at 11 places more; typhoid fever at 31 places less; and consumption at 49 places less than in the preceding month.

Deaths reported to the Secretary of State for the month of November, 2,628—1 less than for the preceding month. Death rate, 12.9. Deaths of infants under 1 year, 418; 1 to 4 years, inclusive, 171; and 789 of persons over 65 years of age. Important causes of death were as follows: Pulmonary tuberculosis, 158; other forms of tuberculosis, 27; typhoid fever, 80; diphtheria and croup, 112; scarlet fever, 14; measles, 7; whooping cough, 28; pneumonia, 206; cancer, 140; accidents and violence, 194.

MINNESOTA.—Minneapolis, 240,000. Report for October: Deaths, 170—25 under 5 years. Annual death rate for twelve months ending Oct. 31, 19.59. Deaths from typhoid fever, 7; consumption, 19; cancer, 17; organic heart disease, 10; pneumonia and broncho-pneumonia, 13; Bright's disease, 13.

St. Paul, 175,000. Report for October: Deaths, 119—26 under 5 years; death rate, 7.93. Deaths from consumption, 15; pneumonia, 7; cancer, 7; typhoid fever, 2; scarlet fever, 2.

MISSOURI.—St. Louis, 645,000. Report for October: Deaths, 817—79 under 5 years; annual death rate, 12.66. Deaths from

zymotic diseases, 112; scarlatina, 8; diphtherian croup, 16; whooping-cough, 6; typhoid fever, 29; remittent fever and congeners, 17; diarrheal diseases, 20—17 under 5 years; cancer, 34; phthisis, 71; bronchitis, 33; pneumonia, 40; other diseases of the respiratory organs, 27; diseases of the circulatory system, 70; Bright's disease and nephritis, 40; accident, 45.

NEW JERSEY.—Hudson County (Jersey City and environs), 421,692. Report for October: Deaths, 594—176 under 5 years; death rate, 16.9. Deaths from croup, 6; diphtheria, 16; scarlet fever, 3; whooping-cough, 2; typhoid fever, 6; diarrheal diseases, 12; all zymotic diseases, 58; phthisis, 70; bronchitis, 11; pneumonia, 58; cancer, 12; violence, 35; still births, 47.

Newark, 266,000. Report for the week ended December 5: Deaths, 96—24 under 5 years; death rate, 18.76. Deaths from contagious and infectious diseases, 22; diphtheria, 4; consumption, 11; still births, 9; cancer, 7.

In virtue of recent legislation, the State has been divided in 445 sanitary districts, and the local authorities in each district are empowered to take active measures for the protection of the public health, but in only a small number of these districts is an inspector employed who has received instruction in the art of public hygiene. To the end that local boards of health may be enabled to secure the services of capable health officers and trained sanitary inspectors, the Board of Health of the State of New Jersey is authorized to cause examinations to be made by such persons and at such times and places as it may appoint, and under such rules and regulations as it may adopt, for the purpose of determining the qualifications of applicants for license as health officers and sanitary inspectors; every such examination shall be in such subjects and conducted in such manner as the Board of Health of the State of New Jersey shall direct, and every applicant whose examination shall be approved by said State Board shall receive a license as health officer or sanitary inspector as provided.

The service has been organized accordingly. Rules and regulations providing for and governing examinations for license to serve as health officers and sanitary inspectors are supplied by Henry Mitchell, M. D., Secretary, Trenton.

NORTH CAROLINA.—Bulletin of mortality for October summarizes reports of 26 towns, with aggregate population 154,200: white, 90,350, colored, 63,850; aggregate deaths, respectively, 114,

144: 258; death rates, 15.1, 27.1: 20.1. Deaths: from consumption, white, 9, colored, 20: 29; heart diseases, white, 11, colored, 12: 23; diarrheal diseases, white, 12, colored 12: 24; typhoid fever, white, 4, colored, 5: 9; deaths under 5 years, white, 37, colored, 56: 93; still born, white, 2, colored, 14: 16.

OHIO.—Cleveland, 420,000. Report for October: Deaths, 459—70 under 5 years; annual death rate, 13.11. Deaths from typhoid fever, 22; diphtheria and croup, 29; smallpox, 1; tubercle of lungs, 37; pneumonia, 29; cancer, 16; heart diseases, 29; Bright's disease, 18; diarrhea and enteritis (under 2 years), 16; early infancy congenital icterus, debility, etc., 32; senile debility, 14; still births, 42.

PENNSYLVANIA.—Philadelphia, 1,378,624. Report for week ended December 5: Deaths, 451—99 under 5 years. Deaths from Bright's disease, 4; consumption, 52; diphtheria, 12; croup, 2; diseases of the heart, 39; typhoid fever, 10; nephritis, 23; pneumonia, 61; cancer, 24. *Smallpox* increasingly prevalent; 99 cases, 15 deaths.

Pittsburg, 354,000. Report for the week ended December 5: Deaths, 154—54 under 5 years; annual death rate, 22.62. Deaths from diphtheria and croup, 6; whooping-cough, 2; smallpox, 6; typhoid fever, 11; tuberculosis, 11; pneumonia, 36; cancer, 3.

### *The Typhoid Fever in Butler.*

Dr. George A. Soper, engaged by "The Engineering News" to investigate the typhoid epidemic at Butler, Pa., and its causes, will report that the epidemic has by no means attained its culmination, about 50 per cent. of the cases not having reached the critical stage.

In three weeks there were 1,000 cases, and up to Dec. 14 1,247 cases and 51 deaths had been reported. The epidemic he attributes to the suspension of the mechanical filtration of the city water supply.

The "New York Tribune," December 6, in an article dealing with the matter, says: "The fact that Butler's sewage drains into Conequenessing Creek has given rise to a problem which the Federal authorities have deemed of sufficient importance to investigate. There are several small towns and boroughs below Butler that take their water from the creek, and doctors agree that immediate steps must be taken to prevent the spread of the disease to these places. Dr. John F. Anderson, acting director of the hygienic laboratory of the Marine Hospital Service, has been sent

to Butler from Washington to investigate the situation there and to judge of the possibility of the disease spreading to other States."

PORTO RICO, 953,943.—Report for October: Deaths, 2,026—753 under 5 years. Annual death rate, 24.4. Still births, 155; cerebrospinal fever, 13; diphtheria, 5; typhoid fever, 5; pneumonia, 34; puerperal fever, 11; diarrheal diseases, 28; anæmia, 604; bronchitis, 83; heart diseases, 17; tuberculosis, 151; diseases of the nervous system, 29; violence, 13; undefined diseases, 1,029.

UTAH.—Salt Lake City, 75,000. Report for October: Deaths, 50—11 under five years. Annual death rate, 12.61. Deaths from typhoid fever, 6; tubercle of lungs, 1; cancer, 3; organic diseases of the heart, 6; pneumonia, 3; Bright's disease, 3; senile debility, 2.

WASHINGTON.—Seattle, 125,000. Report for November: Deaths, 97—19 under 5 years. Annual death rate, 9.24. Deaths from tuberculosis, 11; typhoid fever, 4; diphtheria, 2; organic heart diseases, 15; Bright's disease, 7; cancer, 1.

WISCONSIN.—Milwaukee, 315,000. Report for October: Deaths, 323—98 under 5 years; annual death rate, 12.07. Deaths from typhoid fever, 6; diphtheria, 7; phthisis, 28; pneumonia and broncho-pneumonia, 26; cancer, 22; organic heart disease, 25; diarrheal diseases, under 2 years, 20; Bright's disease, 17; congenital debility, 21; violence, 28; accidents, 19.

Report for twelve months ended April 13, 1903: Births, 7,406, as against 7,415 for 1901.—Deaths, 3,796; death rate, 12.65 on an estimated population of 300,000. For the year 1901 the number of deaths was 3,833, representing an annual death rate of 12.99. Within the last ten years the mortality rate of the city has been lowered from 20.25 in 1892 to 12.65 per 1,000 in 1902.

*Diphtheria.*—There were 455 cases, with 83 deaths, a percentage of 18.2, as against 483 cases with 100 deaths, a percentage of 20.7, for the year 1901.

*Smallpox.*—261 cases, with one death—the largest number of cases for one year since the great epidemic of 1894.

*Tuberculosis.*—Cases seem not to have been reported; deaths, 395, as compared with 473 in the preceding year.

*Typhoid Fever.*—208 cases, with 48 deaths; in the preceding year, 205 cases, with 63 deaths.

## OBITUARY.

Dr. ROBERT WOOD MITCHELL, aged 71, one of the most prominent physicians in the South, died at his home in Memphis, Tenn., Nov. 2, 1903, from heart disease. He had been ill with pneumonia, though heart disease was the immediate cause of his demise.

Dr. Mitchell earned for himself the title of "Hero of the Epidemics" through his courage and ability in nursing yellow fever patients in the scourges which visited his city. He was a notable figure in the yellow fever epidemic of 1878 and 1879, and braved all the terrors of the plague in administering to the wants of the stricken. He organized the Memphis City Hospital before the Civil War, and during this struggle was successively surgeon of a Tennessee regiment, brigade and division surgeon. He was a member of the Congressional Committee appointed to look into the causes of yellow fever, and subsequently a member of the National Board of Health.

Kind, genial, courtly, gentle and lovable, in all the walks of life, as a citizen, as a soldier, and as a member of the medical profession, he was universally liked and highly esteemed by all who knew him.

From the "Record Blank," filled out by himself in his application for membership in the Association of Medical Officers of the Army and Navy of the Confederacy, we learn that he was the son of a Confederate soldier, and was born in Madison county, Tenn., August 26, 1831. He entered the military service of his State as Assistant Surgeon of the Thirteenth Tennessee Infantry, and when transferred to the Confederate States service was promoted Surgeon of the Fifteenth Tennessee Infantry, subsequently Senior Surgeon of Preston Smith's Brigade, and Chief Surgeon of Clark's Division. He served temporarily with Vaughan's Brigade, and for a short while on the staff of General N. B. Forrest. He graduated in medicine at the Medical Department of the University of Louisiana in 1856.

# INTERNATIONAL CONGRESS ON TUBERCULOSIS.

TO BE HELD OCT. 3D, 4TH AND 5TH, 1904, UNDER THE AUSPICES OF THE AMERICAN EXPOSITION, ST. LOUIS, AND OF THE AMERICAN CONGRESS ON TUBERCULOSIS.

The Committee on Organization of the International Congress on Tuberculosis appointed by the Hon. David R. Francis, President of the Universal Exposition, St. Louis, 1904, met at the Press Club in the city of New York on the 11th day of November, 1903, and took the preliminary steps to organize an International Congress on Tuberculosis.

Nearly every member of the committee was present or represented by proxy. It was unanimously resolved to organize an International Congress under the following name: "American International Congress on Tuberculosis, to be held October 3d, 4th and 5th, 1904, under the auspices of the Universal Exposition, St. Louis, 1904, and of the American Congress on Tuberculosis."

The present officers of the American Congress on Tuberculosis were, with a few changes and exceptions, elected to the corresponding offices in the American International Congress on Tuberculosis, as follows:

HONORARY PRESIDENTS.

| LAY: | MEDICAL: |
|---|---|
| Hon. John Hay, | Prof. Dr. Maurice Benedikt, |
| Hon. Gen. Russell A. Alger, | Dr. A. N. Bell, |
| Hon. Ex-Judge A. H. Dailey, | Prof. Charles H. Hughes, |
| Hon. Judge C. G. Garrison, | Gen. Presley M. Rixey, |
| Hon. Stephen B. Elkins. | Gen. Nicholas Senn. |

COUNCIL.

Moritz Ellinger, Esq., Chairman.
J. Mount Bleyer, M.D., N. Y. City.
A. P. Grinnell, M.D., Vermont.
H. Edwin Lewis, M.D., Vermont.
Richard J. Nunn, M.D., Ga.
W. F. Drewry, M.D., Va.
M. K. Kassabian, M.D., Penna.
J. W. P. Smithwick, M.D., N. C.

OFFICERS.

President—E. J. Barrick, M.D., Toronto, Ontario.
First Vice-President—F. E. Daniel, M.D., Austin, Texas.
Second Vice-President—Ex-Chief Justice L. Bradford Prince, Santa Fé, N. M.
Third Vice-President—Dr. Charles K. Cole, Helena, Mont.
Fourth Vice-President—Dr. Sofus B. Nelson, Pullman, Wash.
Fifth Vice-President—Dr. A. M. Linn, Des Moines, Iowa.
Secretary—Samuel Bell Thomas, 116 Nassau St., New York.
Treasurer—Clark Bell, 39 Broadway, New York.

VICE-PRESIDENTS-AT-LARGE.

His Worship Mayor Beck, London, Ontario.
Charles G. Hicks, M.D., Dublin, Ga.
Wm. Bayard, M.D., St. John, N. B.
H. Edwin Lewis, M.D., Burlington, Vt.
A. C. Bernays, M.D., St. Louis, Mo.
J. Mount Bleyer, M.D., New York City.
T. M. McIntosh, M.D., Thomasville, Ga.
Alexander Mack, M.D., Hawkinsville, Ga.
Col. E. Chancellor, M.D., St. Louis, Mo.
Wm. F. Brunner, M.D., Savannah, Ga.
T. D. Crothers, M.D., Hartford, Conn.
Judge Abram H. Dailey, Brooklyn, N. Y.
Ex-Sen. Henry D. Winton, Hackensack, N. J.
J. A. McNeven, M.D., Gibbonsville, Idaho.
A. E. Osborne, M.D., Eldridge, Cal.
J. C. Schrader, M.D., Iowa City, Iowa.
J. H. Tyndale, M.D., Lincoln, Neb.
Hon. Moritz Ellinger, New York City.
Juan A. Fortich, M.D., Cartagena, Colombia, S. A.
R. F. Graham, M.D., Greely, Colorado.
A. P. Grinnell, M.D., Burlington, Vt.
Capt. H. D. Snyder, M.D., Governor's Island, N. Y.
Thos. Bassett Keyes, M.D., Chicago, Ill.
Health Commissioner John K. Simon, St. Louis, Mo.
Luis H. Labayle, M.D., Leon, Nicaragua.
W. F. Morrow, M.D., Secretary State Board of Health, Mo.
Louis Leroy, M.D., Nashville, Tenn.
Dr. Eduard Liceaga, City of Mexico.
Dwight S. Moore, M.D., Jamestown, N. Dak.

Wm. H. Murray, M.D., Plainfield, N. J.
T. D. Barber, M.D., Charlestown, W. Va.
C. S. Ward, M.D., Warren, Ohio.
Prof. S. H. Weeks, M.D., Portland, Me.
W. B. Outten, St. Louis, Mo.
Vice-Presidents of States' Representatives will be announced later.

BOARD OF EXECUTIVE OFFICERS.

Clark Bell, Esq., Chairman.
E. J. Barrick, M.D., President.
Moritz Ellinger, Esq., Chairman of Council.
Samuel Bell Thomas, Secretary.
Standing Committees not yet announced.

It was unanimously resolved that the Congress be open to the legal, medical, and all other professions, judges, philanthropists, scientists, statesmen, legislators, and all citizens interested in averting the ravages of the dread disease, and that they be invited to co-operate and become members of the body.

All the Standing Committees as organized in the American Congress on Tuberculosis were made the Standing Committees in the International Congress.

The same power, authority, and duties that had been conferred upon the Board of Executive Officers in the American Congress on Tuberculosis, and upon its council and management, were adopted and conferred upon the same officers and committees in the International Congress.

The Board of Executive Officers were instructed to extend invitations to eminent citizens, societies, and organizations, both at home and abroad, to co-operate and unite with the International Congress, who are in sympathy with its aims and objects.

The dues of members for the year 1903 were fixed at the sum of one dollar.

All members of the American Congress on Tuberculosis who had paid their dues were, by unanimous vote, made *ipse facto* members of the International Congress, and all members hereafter enrolling in the Congress were entitled to receive the "Medico-Legal Journal" (Vol. 21), which is the organ of the body and contains its proceedings, at half price, $1.50, payable in advance.

It was moved and carried that the Board of Executive Officers take into consideration the propriety of increasing the number of

the Honorary Presidents of the American International Congress on Tuberculosis and report their conclusions at a future meeting.

It was unanimously resolved that the propriety of inviting delegates from other governments outside of and beyond the Western Hemisphere to the Congress be referred to the Board of Executive Officers, with power, and that they report their action and recommendations at a future meeting.

It was resolved that the organization of the Standing Committees on the same plan and basis as that adopted by the American Congress on Tuberculosis be referred to the Board of Executive Officers, with power, and that they be instructed to report their action on the same at a future meeting.

It was further unanimously resolved that the Board of Executive Officers were authorized and empowered, in their discretion, to make any changes in any of the officers and committees of the American International Congress on Tuberculosis as they deem, by unanimous action, to be for the best interests of the body in the accomplishment of its mission, and to that end they be empowered to make such changes, by unanimous action, in the autonomy of the Congress and basis of organization as they should see fit at any time to adopt by unanimous vote.

It was moved and seconded that the Chairman of the Committee, the President of the Congress, and the Secretary of the Committee on Organization be named a committee, with power, as to the advisability of increasing the number of the membership of the Committee on Organization, with a view of having it more representative in character of an international body.

The Chairman of the Committee on Organization laid before the committee a communication from Howard J. Rogers, Director of Congresses, informing the committee that Surgeon-General Nicholas Senn, of Chicago, Ill., and Dr. Thomas Darlington, of New York, had been added to the Committee on Organization.

This action was approved by the committee, and Dr. Darlington took his seat in the committee.

The committee elected as its secretary, Thomas Darlington, M.D., and as its treasurer the chairman, Clark Bell, Esq.

CLARK BELL,
*Chairman Committee on Organization.*
D. J. BARRICK, M.D.,
*President.*
THOMAS DARLINGTON,
*Secretary Committee on Organization.*

## BOOK REVIEWS.

JAPANESE PHYSICAL TRAINING: The System of Exercise, Diet and General Mode of Living that has made the Mikado People the Healthiest, Strongest and Happiest Men and Women in the World. By IRVING HANCOCK, author of "Life at West Point," "Tales from Luzon," "What One Man Saw," etc. Illustrated. 12mo. Pp. 156. New York and London: G. P. Putnam's Sons.

A historical sketch of Japanese physical culture from most ancient times—so ancient, the author tells us, that its origin dates before the time when the authentic history of these people began, which they have retained while they have adopted from Western civilization everything that they consider to be necessary to their national development. "They have done more, for, whereas *jiu-jitsu* was taught at one time to the aristocratic classes only, it is taught now to all of the people of *Dai Nippon* who wish to acquire it. The value of *jiu-jitsu* is proven by the fact that the Japanese while a diminutive race, possess the greatest endurance of any people on earth."

That the Japanese are the healthiest and strongest people on earth are pretty strong expressions, and if so, they should be the longest lived, but for this information is lacking. However, besides the very thorough system of physical exercise universally taught and practiced by them there is enough said about its adjuncts, personal and domiciliary cleanliness, taken altogether, to fully justify the author's conclusion with regard to their healthiness and strength, and that they are probably proportionally long lived.

There are some six systems of *jiu-jitsu* (the collective term of their physical training) taught, which the author describes and illustrates with sufficient detail to be easily understood; the aim being to give a perfect, composite whole of the essential principles of health and of the tricks of attack and defence that are needed by the perfect physical man or woman. Physical weakness or long illnesses in Japan, he tells us, are considered to be the misfortunes of only the very aged. The Japanese look upon lack of strength as being a freak or an eccentricity. He attributes all this to the exhilarating, life-giving work of the *jiu-jitsu*, which re-

quires four years' time for its mastery, each step to be taken up thoroughly in its order. Among the plates, which add much interest to the book, are two Japanese models of extraordinary strength, who posed for the illustrations—they look it.

DISEASES OF METABOLISM AND NUTRITION.—By Prof. Dr. CARL VON NOORDEN, Physician in Chief to the City Hospital, Frankfort, A.M. PART IV, THE ACID AUTOINTOXICATIONS. Pp. 80. Price 50 cents. New York: E. B. Treat & Co.

Uniform in style with the previous parts before reviewed. It describes the derangements of metabolism which result in an overproduction of acid, thus endangering the proper degree of alkalinity of the blood. Shows how acid autointoxication occurs, and the pathological results, and the necessity for physicians who would treat chronic conditions successfully to keep a close and intelligent watch upon the digestion, excretion and assimilation of their patients. The cause of diabetic coma is described: the accumulation of acids in the body; and that it is upon this theory that the alkali treatment of diabetic coma is based. A concise summary of knowledge upon a most important subject of practical utility to all physicians.

A NON-SURGICAL TREATISE ON DISEASES OF THE PROSTATE GLAND AND ADNEXA. By GEORGE WHITFIELD OVERALL, A.M., M.D., formerly Professor of Physiology in the Memphis Hospital Medical College. 12mo. Pp. 207. Illustrated. Chicago: Rowe Publishing Co.

A treatise based upon extensive observation and much clinical experience in the use of medicines, electrolysis, cataphoresis and mechanical ingenuity, in the treatment of one of the most obstinate of diseases. The author does not wish, however, to convey the idea that he limits the treatment entirely to these means, for there are some neglected cases in which the use of the knife becomes indispensable. But he very explicitly states the advantages of the treatment which he advocates, in comparison with the too common surgical treatment and the not infrequent irremediable result in the event of failure of surgical operation. His contention is all the more forceful and commendable because of the facile impunity with which the knife is nowadays resorted to on account of confidence in antiseptic procedure. We take pleasure in commending it to all physicians as a most timely and practical treatise.

QUIZ-COMPENDS, DISEASES OF THE EAR, NOSE AND THROAT. By JOHN JOHNSON KYLE, B.S., M.D., Lecturer on Otology, Phrenology and Laryngology, and Assistant to the Chair of Pathology in the Medical College of Indiana, etc. 12mo. Pp. 180, with 85 illustrations. Price 80 cents. Philadelphia: P. Blakiston's Son & Co.

Admirably suited to its purpose; comprehends the gist of the best thoughts upon the subjects of which it treats.

DISEASES OF THE HORSE: SPECIAL REPORT BY DRS. PEARSON, MICHENER, LAW, HARBAUCH, TRUMBOWER, LIAUTARD, HOLCOMBE, HUIDEKOPPER, STILES and ADAMS. Revised Edition. Pp. 600. U. S. Department of Agriculture. Bureau of Animal Industry, Washington: Government Printing Office, 1903.

This new edition of the Report on Diseases of the Horse, prepared under the direction of D. E. SALMON, D. V. M., Chief of the Bureau of Animal Industry, four years ago, is doubtless because of the excellence of the work which THE SANITARIAN remarked upon at the time of the first issue, and in virtue of *Joint Resolution* of Congress providing for the publication of two hundred thousand copies of the Special Report on Diseases of the Horse, as follows:

"That there be printed and bound in cloth two hundred thousand copies of the Special Report on the Diseases of the Horse, the same to be first revised and brought up to date, under the supervision of the Secretary of Agriculture, one hundred and twenty-eight thousand for the use of the House of Representatives, sixty-four thousand copies for the use of the Senate, and eight thousand copies for the use of the Department of Agriculture. Approved, June 24, 1902."

This special issue seems to be restricted to the purpose indicated, inasmuch as it appears that the Department has no copies for general distribution. This is to be regretted, for notwithstanding the apparently large issue to members of Congress for distribution, as the excellency of the work becomes more generally known the demand for it will greatly exceed this source of supply. It is incomparably so superior to any other work in the English language on the subject that the demand for it will soon be very urgent.

THE NEW YORK POST-GRADUATE HOSPITAL REPORT, 1903, is a particularly instructive and elucidative report on the best hospital

conditions. In addition to the details of the personnel, arrangement and privileges of the institution, the quarters, wards, operating room, roof-garden, etc., are beautifully illustrated. There are twenty private rooms in which pay patients may be attended, if they are under the care of the Attending Physicians and Surgeons of the Post-Graduate Hospital.

The Dispensary of the hospital is exclusively for those unable to pay for medical and surgical advice.

MEMORIAL HOSPITAL, RICHMOND, VA. Incorporated October 13, 1899; opened for patients August 1, 1903: designed to meet the requirements of every class and every condition. Its aim is to relieve suffering humanity by every means known to medical science. In order that its benefits may be enjoyed by all, it has established two departments, one for pay patients, who are treated in private rooms, and one for charity patients, who are treated in wards. There is no profit to be derived from the institution, and the number of free beds will be increased as rapidly as its finances will allow.—Mr. E. Randolph Williams, Secretary.

OPENHEIMER INSTITUTE.—A brochure of twenty pages, embracing list of the directors, general statement of the history, development and work of the Institute and of the Women's National Auxiliary. The results it has obtained in the treatment of alcoholism have secured the confidence of a large clientele among the medical profession of New York and other cities, and gained the confidence and indorsement of many clergymen and other professional men throughout this country.

"Every patient is carefully examined by competent medical authority as to physical condition and history. He is then treated personally as his symptoms demand, and for this purpose physicians of long experience in general practice and trained for this special work at the Institute are in attendance."

At a recent meeting of the Board of Directors the Women's National Auxiliary was organized to take charge of, administer and assist in the charitable work to be done by the Institute; to spread knowledge of it and to temporarily look after those who have been treated in bettering their physical and moral conditions, either by co-operation with the various existing organizations or otherwise.

For general information in regard to the Institute, write or apply to the executive offices, 170 Broadway, New York. For information concerning the philanthropic and charitable work of the

Institute, apply to the Women's National Auxiliary, room 401, Fuller Building, Fifth avenue, New York.

## CONTEMPORARY LITERATURE.

### JEFFERSON'S EMBARGO.

No other President ever exercised such hypnotic sway over Congress as Jefferson did in that crisis. Said the Federalist John Quincy Adams, then in the Senate, in advocating the first of Jefferson's bills: "The President has recommended this measure on his high responsibility. I would not consider. I would not deliberate. I would act." This was in the closing days of 1807. The Senate acted by passing, a few hours later, the bill, one of the most disastrous to private interests ever placed on the National Statute Book, which was also rushed through the House. The object was to protect American sailors, shippers, and ship-owners and to peacefully coerce the belligerents into respect for American rights. This was magnificent, but as Jefferson neglected to prepare for war in case war could not be abolished by his plan, it was not sense. The orders in council and the decrees meant risk for American commerce. The embargo meant ruin or rebellion. America, and not the belligerents, was the chief sufferer. George III rejoiced at the embargo as a means of crippling American commerce, of which England was jealous.—Charles M. Harvey, in the December "Atlantic."

### THE JOY OF LIVING.

"We know but little of joy; and as for the joy of living, most of us have missed that altogether"—the lack of happiness in the world and the unreasonableness of such a state of affairs is the subject of an inspiring paper by Lillie Hamilton French, in the January "Delineator." Although the writer lays much stress upon the non-existence of happiness, she points a way to individual betterment of conditions. Many people sink under a burden of care, whereas care should be an uplifting influence, "for the saddest of life is not found where Care is, but there where Love is and Care is denied." There is that in life to recompense for sorrow, however great; the trouble is that many cannot see the good about them everywhere, in Nature. Therein is the secret of all joy, is Miss French's message—a right understanding of life, looking on the bright side of things. "Yet even when your strength dies with

discontent—and here is the very joy of life itself—Nature, with its remedial forces, will bring strength back to you, for Nature, which is life, goes on eternally, renewing all things and always ready to renew you."

"GO NOT TOO FAR."

Go not too far—too far beyond my gaze,
  Thou who canst never pass beyond the yearning
Which, even as the dark for dawning stays,
  Awaits thy loved returning!
Go not too far! Howe'r thy fancies roam
  Let them come back, wide-circling, like the swallow,
Lest I, for very need, should try to come—
  Yet find I could not follow!
    —Florence Earle Coates, in the December "Atlantic."

WAGNER'S "PARSIFAL."

Richard Wagner completed "Parsifal," his last work, only a few months before it was produced, although he had been working on the idea for many years. The first conception of it is said to have come to him as early as 1857. In 1877, he had finished the poem. During the following year he completed the music of the first act. On the instrumentization of the whole opera he worked for three years, and finished it in January, 1882.

Wagner found the story in that field of mediæval lore and mysticism that his studies for his earlier operas had laid bare to him. From the German Minnesinger, Wolfram von Eschenbach, who wrote the epic "Parzival," and from Chétrien de Troyes, he drew most of the material, which he used, with the privilege of the artist, in the way that appealed to him most strongly. "Parsifal" thus became his own in the form in which he gave it to the world.

The story is so vague and symbolic that few persons have ever been able to clarify it. It makes a profound poetic impression on the hearer, however, and its supernatural pictures are eloquent with a mystic mediæval beauty.

Opinions differ as to the musical merits of Wagner's last work, but it is generally admitted that it is not his masterpiece. The score is, of course, modeled on the Wagner method, and the music consists of a series of "leading motives" so combined as to provide a continuous musical accompaniment to the solemn and impressive if disconnected episodic scenes. The voices sing in the familiar "endless melody" of the later Wagner operas. The first and third

acts are deeply solemn in their religious aspect, and the music is beautiful and significant in spite of this character. In the second act, the flower maidens sing in melodious and alluring dance rhythms. To persons who have never heard "Parsifal," the music will be a new revelation of Wagner's genius as composer and poet, even though the opera be not his master-work.—From " 'Parsifal' in New York," by Lawrence Reamer, in the "American Monthly Review of Reviews" for December.

---

CONCERNING PROCTOR'S.

The theatrical manager who can please the children is the one who unfailingly wins success. These are the jolly days (as well as the holidays) when the little folks are especially eager to be amused by visits to the theatres, and in the Proctor theatres above all others are they catered to intelligently and effectively. Ever since the holidays came near, Mr. Proctor has modeled his programmes with a keen eye to the delighting of his school-children patrons, whom he numbers in the thousands. On any of his bills these days they are sure to be amused by clever trained dogs, grotesque and solemn-faced monkeys, cutely educated cats, or beautiful trained horses; while the marionette shows, the funny moving pictures with their thrilling portrayal of Santa Claus' midnight chimney visit—all contribute to send the little ones home simply delighted.

The wizard Edison, it is said, invented the Kalatechnoscope, or moving picture machine, during one of his idle days, when his brain had become tired with some of the vast problems that confronted him. If this be true, then all the children in the world owe a debt of pleasurable gratitude to that marvelous man of Menlo Park, for of all the features ever placed upon a theatre stage the Kalatechnoscope heads the list in its perpetual fascination for the young folks.

A recently unique but rapidly growing fad in suburban towns, where good entertainment is sought all the time, is the formation of "Proctor Clubs," composed largely of ladies and children who long ago acquired the "Proctor habit" during their shopping visits to New York. These clubs consist generally of congenial little groups of friends and neighbors, from ten to fifty in number, who select certain afternoons or evenings for "Proctor Theatre Parties," which they attend in a body. A block of seats are reserved for them in advance, and there is always some special feature in-

troduced in the bill for their benefit. Already this season nearly forty of these clubs have been in successful operation.

## PUBLICATIONS RECEIVED.

Further Investigations Among Fruitarians, by M. E. Joffa, U. S. California Agricultural Experiment Station. Bulletin No. 132, U. S. Department of Agriculture, Washington, D. C.

Open Air Treatment of Tuberculosis: Tent Life in Arizona. R. W. Craig, M.D., Phoenix, Ariz.

An Improvement in Radiography: A print made by direct exposure and development in half a minute without a dark room. Sinclair Tousy, A.M., M.D., New York.

Complete Removal of the Left Vocal Cord for Malignant Disease. Walter F. Chappell, M.D., M.R.C.S., New York.

My Present Position on Appendicitis Question. Robert T. Morris, M.D., New York.

Diagnosis and Treatment of Hereditary Syphilis. E. Harrison Griffin, M.D., New York.

German Meat Regulations, with Original Text. Bulletin No. 50, Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C.

Malignant Tumors of the Pharynx. Francis J. Quinlan, M.D., New York.

Spotted Fever (Tick Fever) of the Rocky Mountains. A New Disease. John F. Anderson, Hygienic Laboratory. Bulletin No. 14, U. S. Public Health and Marine Hospital Service, Washington, D. C.

Treatment of Cancer by the X-Ray, with Remarks on the Use of Radium. William James Morton, M.D., New York.

Some Cases Treated by the X-Ray. *Ibid.* Medicina Preventiva y la Tuberculosis. Dr. Erastus Wilson, Habana, Cuba.

Radaerotherapy: Liquid Air and the X-Ray in Medicine and Surgery. A. Campbell White, M.D., New York.

Four Months' Experience with Anti-Streptococcic Serum in Pulmonary Tuberculosis. S. G. Bonney, A.M., M.D., Denver, Col.

Mechanical Vibration as a Physical Agent in the Treatment of Disease. Frederic H. Morse, M.D., Melrose, Mass.

Was It Wise for the American Medical Association to Change Its Code of Ethics? D. W. Cathell, M.D., Baltimore, Md.

# THE SANITARIAN.

## FEBRUARY, 1904.

NUMBER 411.

## EDUCATION AND THE WORLD'S WORK OF TO-DAY.*

By Prof. R. S. WOODWARD.

It is a time-honored custom in connection with the commencement exercises of our American colleges to read an address, for the benefit especially of those who are about to pass from the limited duties and responsibilities of studentship to the wider duties and responsibilities of citizenship. An opportunity is thus afforded for some last words of friendly counsel, and for a review of those ancient academic ideals which, while they have animated generation after generation of our predecessors, have survived them all, and are still a source of inspiration to our contemporaries. But appropriate as this sort of baccalaureate address may have been in the past, it now appears to be somewhat too scholastic for the happy day which marks the end of a college course of study and the joyful entrance of the graduates into the activities of professional and business life. Moreover, a just appreciation of good advice and a generous susceptibility to lofty ideals require a degree of physical comfort and degree of mental repose rarely attainable in the heat of our average summer day. The solemn lessons of antiquity are losing their force, also, by reason of iteration and reiteration from the commencement platform; so that one may no longer expect to strike a responsive chord, even in classical colleges, by an appeal to the ideas and the ideals of our distinguished ancestors.

It has seemed to me best, therefore, to depart from the beaten track, and to invite your attention to a subject which lies closer at hand; and as the merchant acts wisely in taking stock at the end of his fiscal year, so I trust we, teachers and students alike, may utilize advantageously the end of this academic year to in-

*Commencement address read at Rose Polytechnic Institute, June 11, 1903.

quire what education is and to what extent it meets the demands of our times.

We all know, of course, in a general way, what education means; but most of us would hesitate, I think, if called upon to give a concise definition of the word. Indeed, those of us engaged in the profession of teaching might be held to be ill-qualified to explain the import of the word. We are so near to the business and so much occupied with its details that we may fail to see it in its true proportions, and hence fail to estimate aright its effects and tendencies. On the other hand, those unacquainted with the elaborate machinery of educational affairs are plainly disqualified, for they lack the precise and intimate knowledge essential to define so comprehensive a term. If we appeal, American fashion, to the majority, it will be found that the concensus of public opinion regards education as a series of routine performances, carried on by means of more or less elaborate methods, involving tasks which students sometimes undertake with joy and sometimes with sorrow, and ending for those who complete the programme with a ceremony called graduation. At any rate, this is what we usually mean by elementary education, and we all believe that its administration is desirable, if not essential, to the average boy or girl. And yet I think it would be found troublesome to explain just what is accomplished by this process and why a person subjected to it may be called educated and why one not so fortunate may be called uneducated. Of course, the easy explanation is at hand. We justify the process by its results. These are found to be on the whole elevating to the majority, and so we drift on with the current of public opinion, forgetting, commonly, that while this democratic leveling of intelligence has certain obvious advantages, it has also certain, though perhaps less obvious, disadvantages. And if we inquire what factors should enter into a scheme of elementary education, we at once meet with a confusing diversity of opinion and with the bewildering fact that the schemes already elaborated are so crowded with subjects that there is little chance of adding anything new, and so tenaciously maintained that there is little chance of omitting anything old.

But if we encounter difficulty in defining precisely the meaning and scope of elementary education there would appear to be still greater difficulty in formulating clear ideas as to the meaning and scope of higher education; for with respect to the latter we have to deal with a diversity of opinions which are to a large extent crystallized. Ask the average college-bred man what is the best

line of work to pursue in a college course, and he is pretty sure to answer, if he replies spontaneously, that the line he himself pursued is probably the best, or, perhaps, unquestionably the best. Since the average collegian belongs to the traditional school, the average opinion is as unanimous as it is unilateral; and he who expresses it may justly fortify his view by pointing to the excellent results which have come from the pursuit of the time-honored literary curriculum, or, as he would prefer to put it, from the pursuit of the "classics and the humanities." Quite recently, however, in the historical sense, there has arisen a new form of learning, under the name of science, which has now come to be generally recognized as worthy, at least, of a good share of our attention, if it is not comparable in value with the ancient learning; while some of the bolder advocates of science would give it first place in any scheme of education. This new learning, in the comprehensive sense now implied by the word science, is only about thirty years old. But to understand fully its meaning and to appreciate how profoundly it has affected educational matters, one needs to have lived in the prescientific as well as in the present epoch. Suffice it to say here that the advent of science in education was not accomplished without a struggle, which rose at times to a fierceness not altogether creditable to the combatants involved. But though the storm and stress of that struggle, happily, have died away, there remain some controverted questions whose adjustment must be left, perhaps, to you of the present generation to bring about; for we of the prescientific epoch can not discuss them without arousing prejudice which is attributed either to irrational conservatism, on the one hand, or to sweeping iconoclasm, on the other.

I may allude, in passing, to certain forms of this prejudice, and suggest that our sense of humor should help much to dissipate the intellectual fogs which obscure these matters of controversy, and hence lead to solutions which will rest on foundations of merit alone. Thus, even at the present day, many of the older school of education hold, tacitly, if not openly, that studies may be divided into sharply defined categories designated as "liberal," "humanistic," "scientific," "professional," "technical," etc.; and men and women are said to have had "a liberal training," "a professional training," or "a technical training," as the case may be. They say, by implication at least, that mathematics, when pursued a little way, just far enough to make a student entertain the egotistic but erroneous notion that he knows something of the subject, is an

element of liberal training. On the other hand, if the student goes further, and acquires a working knowledge of mathematics, his training is called professional or technical. Similarly, studies which include the memorabilia of Xenophon and Cæsar, the poetry of Homer and Virgil and Dante and Shakespeare, or, in short, the so-called polite literature, of ancient and modern times, are said to lead to breadth and culture; while studies which include the works of Archimedes, Hipparchus, Galileo, Huygens, Newton, Laplace and Darwin are said to lead to narrowness and specialism; as if the first class of authors were somehow possessed of humanistic traits, and the other class of demoniacal tendencies. So far, indeed, are these distinctions carried that higher moral qualities are not uncommonly attributed to the young man who studies Latin and Greek in order that he may earn a living by teaching them than are attributed to the young man who studies engineering in order that he may earn a living by building bridges which will not fall down and kill folks.

But, you may ask, is it not possible, in spite of tradition, prejudice and conflict of opinion, to lay down some practical precept or working hypothesis that will enable us to proceed along different routes toward the common goal with reasonable hopes of success? Experience during the past thirty years has given, I think, an affirmative answer to this question. We need only to enlarge our definition of education in order to include all that is good in the new learning and to retain all that is good in the old learning. The only imperative restrictions are that we must not prescribe the same curriculum for all students, and that we must not entertain invidious distinctions with respect to any of the curricula. According to this view, then, the formal education of schools and colleges does not consist, as many well-educated people seem to think, in the pursuit of certain studies, but rather in the pursuit of some studies thoroughly well. Herein, it seems to me, is the theoretical as well as the practical solution of the whole matter of the conflict of studies. Provisionally, we have pretty generally reached this conclusion in America. It only remains to replace the narrowness which is willing to accept the traditional limits of learning by a breadth which would hesitate to set any such limits.

If we accept this enlargement of our intellectual horizon, and there seems to be no doubt that we shall soon do so, it will be easy to brush away the distinctions which have long clouded our minds, and still affect our judgments, in the classification of studies. The adjectives liberal, technical, humanistic and professional, as com-

monly used to denote differences or to mark invidious distinctions, will be found to be, usually, misleading or meaningless. All studies conscientiously and laboriously pursued will be seen to be liberalizing and humanizing, whether they be pursued with or without a technical or professional end in view. That it is any more creditable to study the works of Dante and Shakespeare than it is to study the works of Galileo and Darwin will be found to be a frail figment of the imagination, growing out of the supposed holiness of metaphysics and the supposed unholiness of physics.

In the educational transformation that has come about in the last three decades, our schools of science and technology have played an important rôle. It goes without saying that they have demonstrated their right to existence, that they have come to stay, and that they should play a still more important educational rôle in the future. They have won their way to prominence in spite of all opposition; and I think it may be justly said that in thoroughness of work and in the development of the spirit of energy and independence essential to the successful and useful citizen they have already surpassed the older classical colleges. But the strength of their position is measured not so much by academic standards as by the achievements of their graduates. The world no longer asks where and how men have been trained; it goes straight to the point and inquires what they can do. This is the supreme test. That the graduates of our technical schools have met this test successfully is proved by their efficiency in nearly every walk of life. The prominence of their work is especially noteworthy in the great industrial progress of our times. The civil, the chemical, the electrical, the mining, the metallurgical, the naval and the sanitary engineer have established a claim to recognition among the learned professions. Astronomers, botanists, chemists, geologists, geodetists, physicians, zoologists and other so-called specialists have also demonstrated by actual achievements that a scientific training fits men well for the work of the world.

In the meantime great changes have likewise taken place in the curricula and in the attitude toward science of our classical colleges. Most of them have given place in their required or elective studies for the principal sciences. Many of them have limited the requirements in the classical languages to a minimum; while a few of our leading institutions have gone so far as to give the degree of A.B. without any requirement in Latin or Greek. It is a significant fact, also, that the scientific method and the scientific

spirit of investigation have worked striking changes in attitude toward their own specialties among the devotees to ancient learning. Thus they speak of the science of history and the science of theology, and even of laboratory methods in these sciences; and among themselves, teachers of the classics are not infrequently referred to as scientific or archaic, according as they are animated by modern or mediæval ideas. A few eminent educators deplore these tendencies and write regretfully of the vanishing monastic features of college life. A few rail bitterly against what they call "the materialism of science," and charge that the perfume of the Attic violet is being stifled by the mephitic odors of the laboratory. Others assert that, while science may be good enough for engineers who build railroads and dig canals, the classics and the humanities are alone fit for the scholar and the gentleman. But the trend of progress is clearly visible in these as well as in other signs of our times. Mediæval methods, customs and ideals are slowly yielding to the reason of modern thought.

Once free from the bias and the restrictions of inherited opinions, education must appeal to us with a broader and a deeper significance. In the best sense of the word, education is a process which should begin in infancy and end only in advanced age. Science has demonstrated that man is a part of, and not apart from, the universe in which we live; and education in the comprehensive meaning of the word is the process of development which fits us to play well our parts in the infinite variety of phenomena which mold us and which we in turn help to mold. Hence the question of education is a many-sided and a far-reaching one, to the larger aspects of which we even who are engaged with some of its formal details can only point the way. Schools and colleges serve only to give the student a start, whence he enters the "University of the Universe," from which there are no graduates. Each may choose his own field, and if he would be a master in it he must become a specialist. Of course there are those who decry the present as an age of specialists and speak and write ruefully of former times when the more learned minds were able to compass the entire domain of accepted learning. But those were times when accepted learning was mostly of the kind called "polite," times when the rapidly rising sciences and their devotees were referred to with anything but terms of politeness. The change from this not very remote past is irrevocable, however, and it is plainly our duty to make the best of the new conditions, full as they are of novelties and perplexities. The recent great increase in the

quantity of indispensable knowledge forces us to a hitherto unheard of division of labor in the educational field. The specialist is, therefore, a necessity, though there never was a time when the qualifications of a specialist were so numerous and so exacting. In fact, it may be truly said that one's training now must be broadly liberal in order that it may be minutely special.

The age in which we live is pre-eminently the age of educational opportunities. The school, the college, the university, the library and the museum were never so numerous, so free and so efficient as at the present time. Hundreds of experts, in the study and in the laboratory, in the office and in the field, are contributing by their researches to the world's stock of knowledge. Hundreds of literary, historical, scientific and other technical societies are annually swelling the published volume of the world's best learning; while, in a popular way, the newspaper, the journal and the magazine bring daily, weekly and monthly instalments of this best learning to him who can read it aright. Intercommunication by post and by telegraph, and quick transportation over land and sea are rapidly dissipating class prejudices and supplanting them by friendly rivalries in the common educational advance. The illusions which some eastern institutions have long held with respect to their superiority over institutions in other localities, are rapidly vanishing before the tests of merit and achievement. Indeed, if one may judge from the picked men who pursue work for the higher degrees in our graduate schools, it would appear that the centre of education, like the centre of population, is no longer east of the Appalachian Mountains.

So far then as opportunities go, the college student of to-day has great advantages over his predecessor of thirty or forty years ago. Verily, no one need thirst in vain for knowledge, for the fountains thereof are to be found flowing on every hand. But, to paraphrase an old saying, while we may point out the fountains of learning we may not be certain that men will drink deeply or effectively therefrom. It seems proper, therefore, to inquire to what extent these available advantages are appreciated and utilized by the average student of to-day.

It would be quite unreasonable, of course, to suppose that the student of the present day is very different from or much abler than the student of a generation or two ago. The capacity of the human mind, like astronomical phenomena, is subject mainly to secular variations. There is no doubt, however, that the great increase in knowledge and the enlarged means for its diffusion, in

recent times, have led to a perceptible quickening as well as to a perceptible broadening of the intellectual faculties of men. What may be called the experience of life, and this is, in general, the most important part of education, is begun earlier and is realized in larger measure than ever before. Coming thus to the college or university better acquainted with men and things and pursuing a broader and a more laborious course of study, the graduate of to-day is, as a rule, a better equipped and a more efficient man for the work of the world than any of his forerunners. More is expected of him, more is required of him, and more is accomplished by him than in any preceding age.

But while this is the character we may justly attribute to the majority of our college men, there is a noisy minority of them who have succeeded, apparently, in convincing the public, and to a large extent college authorities, that one of the principal functions of an educational institution is the cultivation of muscle and the conduct of athletic sports. Along with the growth of this minority there has sprung up, also, a class of less strenuous men, who, taking advantage of the elective system, are pursuing courses of aimless discontinuity involving a minimum of work and a maximum of play. They toil not, except to avoid hard labor; neither do they spin, except yarns of small talk over their pipes and their bowls. I need not explain to you that these types of men are well known in natural history. From time immemorial the gladiator and the Miss Nancy have received much of that fleeting attention which the careless crowd bestows on the gaudily attired tumblers of the circus and on the transparent masks of pretenders. It is not so well known, however, that these types of men—prospective bachelors of athletics and degree-hunting dudes—are now wielding an influence distinctly inimical to academic ideals and distinctly debasing to academic morals.

Pray do not misunderstand me. I am not opposed to physical culture and athletic sports. Scarcely any element of education is so important as the attainment of a healthy balance between the intellectual and the physical functions of men. The ancient maxim of a sound mind in a sound body is more fitting now than ever before. We know or ought to know much better than our ancestors to what extent clear thought and right action depend on good lungs, sound hearts and unclogged livers. My protest is not against school and college athletics as such, but against athletics as they are now generally carried on, and especially against intercollegiate contests. As now practised, athletics seem to me to

defeat the object they are intended to attain. They cultivate almost exclusively the men who are usually more in need of intellectual training, and they ignore almost completely the men who are physically defective. The latter are only permitted to stand by and whoop for their alma mater and for her gladiators. Strangely enough, too, the advisers and trainers of our teams and crews are not always men to whom good judgment would commit the training of youth, but they are often men as ignorant of physical culture as they are of mental and moral culture; their names, indeed, are commonly better known to the patrons of the turf and the ring than they are to the patrons of the cap and the gown.

The usually keen American sense of humor seems to have failed us in these matters. Thus the reporters appear to think it essential to state that every distinguished college graduate who dies was a noted athlete in his day, and they often ascribe great prowess to men of a notably opposite physique. One might infer also, from the prominence given to the small number of "punters" and "half-backs" of the day, that they are the only college men who are likely to succeed in life. The sporting populace and the sporting alumni go wild with enthusiasm over intercollegiate contests, while the press, in a fashion similar to that followed in describing prize fights, devotes much more space to these ephemeral events than it does to all other educational affairs combined. It is no wonder then that the light-headed undergraduate attires himself like a stable-boy and affects the manners and vices of a cowboy without aspiring to the virtues of either. He may be excused also for entertaining the hypothesis that colleges are athletic clubs, and that his professors, as suggested by Mr. Dooley, will proceed leisurely to take from him the requisite minimum of formalities leading to a degree.

There is a darker side of this question which calls for something more than a quickened sense of humor. It is the vast expense entailed by these extra-academic operations. Fifty to a hundred thousand dollars per annum are certainly not needed by a college or a university to provide adequate physical training for a few athletes and amusement for a few hundreds of men who cannot find health and pleasure in more useful occupations. In so far as educational institutions tacitly encourage the practice of this sort of political economy by students, the majority of whom have yet to try their hands at self-support, they must be held guilty of promoting a degree of extravagance which in other walks of life is usually associated with open corruption.

But the fashions, the follies and the fads of college men, like those of any other limited community, play an insignificant rôle in the larger drama of life. However important to his little circle a student may have been as an undergraduate, he is likely to meet with a chilly reception unless he is well qualified for arduous service in the work of the world. Those who have thus qualified, however, may go forth with confidence; for as ours is pre-eminently the age of educational opportunity, so is it pre-eminently the age of professional and business opportunity. There never was a time when talent, energy and enterprise in young men were so much in demand as at present. Men who can plan and execute; men who can work out knotty problems in engineering, in transportation, in sanitation and in finance; and men who can study aright the mighty questions of industrial and social economy now confronting us, are everywhere needed. Above all, there is a demand for men who can see straight, and who can live lives free from moral obliquity; men who can expose the frauds of politicians and the tricks of boodlers and grafters; and men who can demonstrate, by example as well as by precept, that the homely virtues of honesty, industry and sobriety are not dying out in our land.

The world demands men who are not afraid of hard labor; those who would work during a portion, only, of their leisure time, need not apply. The world demands men who are patient and enduring; those who cannot find pleasure in business, but who would make a business of pleasure, are not wanted. The world demands men of courage and convictions; those who vacillate and temporize are sure to be beaten in the race of life.

Young men often wonder why they get on so slowly and why the world puts so low an estimate on their abilities. While the element of chance is not wholly negligible in these matters, and while "influence" and "pull," especially in politics, sometimes interfere with "natural selection," the reason is generally plain in any individual case. The simple fact is that the world sets severely high requirements for the competent and the trustworthy, and in nine cases out of ten the men who are rejected have failed to pass in these requirements.

Along with the great advantages now afforded for education, and along with the inspiring fields of work now open to educated men there should go a correspondingly high sense of duty on the part of our college graduates. They are in no sense aristocrats, and they would become ridiculous in the assumption of any unproved superiority. Nevertheless, if they are too sensitively pos-

sessed of that modesty which is born of a knowledge of things, we may say for them *noblesse oblige* without undue hesitancy. You who go forth to-day, therefore, must assume, if you bear well your responsibilities, new and increasing obligations, obligations to your college, obligations to your country, and obligations to your fellow-men of the world.

Those of you who have caught the spirit of progress which animates modern science have a special duty to perform. Ours is the epoch of unparalleled improvements and advances. In all that makes for the permanent progress of humanity, the contributions of science in the nineteenth century alone are held by competent judges to compare favorably with those from all other sources throughout historic time. You are among the heirs of these contributions, and it rests with you, in part, to determine what use may be made of them. A flood of light is available, but it would appear to illuminate the intelligence of only a small fraction of our race. When we consider to what extent superstition and error prevail at the present day with the most enlightened peoples of the world, it is plain that the scientific habit of mind is none too common. We smile, for example, at the folly of the sailor whose fears may be drowned in a pot of beer and who commits his fate to a rusty horseshoe nailed over the entrance to his forecastle. And yet, our "city fathers" permit epidemics of typhoid fever to prevail with startling frequency and with frightful mortality. Think, too, for a moment of the shocking waste of health and wealth to which the alluring advertisements of quacks and other charlatans bear testimony in the daily and weekly press. Think also of the waste of time and money which comes from the habit of gambling so common in all races from the lowest to the highest. All such vices are deeply rooted in the human family and fortified by our superstitious tendencies to accept without proof anything which promises the marvelous. No mere literary training can help much to overcome this deplorable inheritance. Nothing short of the scientific frame of mind and habits of thought can prevail against such ancestral traits.

There is endless scope, therefore, for additional improvements and advances along the lines your training in science has fitted you to follow. Science bids you look forward, then, with confident optimism. But you should waste no time in idle contemplation of the splendid achievements already attained. The price of progress, like that of liberty, is eternal vigilance. One must be ever active, ever patiently persistent, proving all things and holding fast to that which is good.—"Science," August 7, 1903.

# BRAIN-FAG, AND ITS EFFECTS ON HEALTH.

By JOHN KNOTT, M.A., M.D. (Univ. Dublin); M.R.C.P.I.; M.R.I.A., Dublin.

Sydney Smith usually receives credit for having popularized the aphorism that "a man is always happy till he finds out that he has digestive organs." Functional derangements of the stomach and liver have long been known to exercise a baneful influence on the owner's enjoyment of the good things of life. But it has been reserved for this present epoch of over-civilization and *jeune siecle* refinement of speculation, to discover and deplore the injurious effects which overstrain of the organs of thought and sensation exercises over the other portions of the human frame. Thinking men have, of course, for many ages been conscious of such influence; but it was only in a very vague way. According to the celebrated author of the "Anatomy of Melancholy," Socrates is answerable for the dictum:

> Oculum non curabis sine toto capite,
> Nec caput sine toto corpore,
> Nec totum corpus sine animo.

A fairly accurate knowledge of the structure and functions of the central nervous system has been attained only within a very recent period indeed. It is now well known that the human body, as in the case of other animals, is essentially formed of a series of minute conducting threads, called "nerves," each of which is connected at one end with one of the fundamental cells of which the various tissues are built up; and, at the other, with a nerve cell, which regulates all the functions of the latter. The rest is merely padding and protective covering—the "leather or prunello" of the complete organic structure. The nutrition of these physiological units is supplied from the blood, minute tubular vessels containing which ramify everywhere among those threads and cells of the body. The blood-vessels are themselves supplied by absorption, from the products of digestion within the alimentary canal; and the nutrient contents pass out, by a process of leakage, to the various tissues in their neighborhood. How the latter select their own

pabulum from the constituents of the blood, and so skilfully repair the waste which continually goes on during the existence of life, is explainable only by the influence of a vital force—a power of organic life, the heart of whose mystery has not yet been plucked out by the scientific physiologist. It is, however, well known that the amount of blood supplied to the tissues, and the peculiar selective power of the latter, by which they regulate their own nutrition, are both directly governed by the central nervous system. Accordingly, when the influence of the latter has been completely cut off from any portion of the living body, nutrition entirely fails, and local death is the result. When the demonstration of this connection has once been satisfactorily understood, it will be seen to follow, as a corollary, that if the nervous system is not in a condition to perform its usual functions, the nutrition—*i. e.*, the health—of the whole body must suffer.

"Mens sana in corpore sano" is an adage old enough to be at least venerable. The idea connoted by the *mens* of the mediæval metaphysician, or *mind* of the average educated person of the opening of the twentieth century, is one which will be found on close examination to be sufficiently vague. What was the nature of the mind, and what was the nature of the soul, what functions they possessed in common, and how far they were to be regarded as separate organs, are questions which have agitated philosophers for untold centuries; and which, undoubtedly led, in their treatment by the Aristotelian schoolmen, to some of the most brilliant displays of speculative subtlety and logical brilliancy that the world has hitherto seen. The philosophers of ancient Greece, nearly every one of whom entertained the most elevated ideas of the functions of the human intellect and displayed the keenest hankering for the immortality of thought and of the mysterious organ of its production, showed a painfully amusing degree of ingenuity in their endeavors to locate the seat of the spiritual portion of man. Plato and Democritus placed it in the head, throughout; Strato, between the eyebrows; Erasistratus, in the investing membrane of the brain; Herophilus, in the ventricular space in the interior of the brain; Parmenides and Epicurus, all over the breast; the Stoics, either in the heart or in the spirit about the heart; Diogenes, in the curved portion of the aorta, which, according to him, was filled during life with the vital spirit; Empedocles considered that it was distributed throughout the mass of blood; and Pythagoras divided the soul into two parts—of which he placed the *vital* portion in the heart, and the *intellectual* in the head. When

the doctrines of the Christian faith were adopted by the nations of Europe, a period of truce was set to these "vain speculations." For many centuries little or nothing was added to the physical knowledge of the human body, and the teachings of Aristotle were accepted as final in the metaphysical domain. With the revival of learning, the restlessness of human inquiry again manifested itself; and as the knowledge of the intimate structure of the human frame slowly (and I may say, painfully) increased, new guesses began to be made concerning the habitat of the soul. With the very gradual growth of the physiological investigation of the nervous system the tendency to locate the soul somewhere within the brain became more defined; and a curious degree of ingenuity—half physical, half metaphysical—was displayed by various authorities in discussing the probabilities of the favored situation. Most would place it in the median plane—in an azygos, or non-symmetrical, organ. For instance, Descartes placed the soul in the *pineal gland,* Bonnet in the *corpus callosum,* Digby in the *sæptum lucidum,* Platner in the *corpora quadrigemina,* Haller in the *pons Varolii,* and Boerhaave in the *medulla oblongata.* It is rather hard to realize the serious defence of such speculations by men of gigantic intellect. Yet such is the history of human thought! The increasing use of the microscope and of the telescope, the free exchange and more rapid transmission of ideas which have developed to such a previously unthought of extent in the second half of the nineteenth century, have had the undoubted effect of checking the future developments of such discussions—at least among scientific men.

To the distinguished physiologist and physician, Gall, certainly belongs the merit of having first strongly advocated the localization of the organs of thought in the superficial part of the brain. The name of this man is very generally mentioned in the present day with a certain amount of derision—as he is almost solely known to the general public as the founder of phrenology. Yet, "faddist" as he undoubtedly was, it is hardly any exaggeration to say that Gall did more to advance our knowledge of the structure and functions of the human brain than did all the scientists of his own age, and of all preceding ages. Even the exaggerations into which his great hobby of localization led him had the effect of stimulating the observations of his contemporaries—if only for purposes of contradiction. No scientific facts are now better established than our knowledge that all the intellectual operations of the human mind are performed in the cells of the cortical layer of the

brain; and that the functional activity of these, as well as of all other cells of the body, is accompanied by, and dependent upon, increased molecular movement. But what the mysterious force is which guides and regulates these molecular movements we know no more definitely than did Pythagoras or Democritus. The partition which separates the *known* from the *unknown* (and *unknowable*) is very thin indeed; so thin that we almost seem to be able to *feel* through it. But we cannot *see* through it: it remains as opaque as ever! Let us then reverently bow before the unseen Architect of our being; and, while we recollect that absolute and final knowledge on any subject has not hitherto been attained by man, let us try to utilize with profit what attainments we possess.

The superficial layer of the brain—the marrow-like mass which fills the interior of the skull—is densely studded with the *nerve cells,* of microscopic size, which collectively form the great imperial parliament that presides over the functions of all parts of the body. Every cell of every tissue of the body is more or less directly connected with these governing cells, by means of the telegraphic filaments which are known as nerves. As already mentioned, the nerve cells and nerve filaments (which are themselves formed of elongated cells) are dependent for their nutrition on the supply of blood, and this latter is in its turn regulated by the influence of the nerve centres. Hence it is that any derangement of the latter can never be limited in its results to its own area—it always transmits the ill-effects to distant parts.

Near the under surface of the brain, and in the slender continuation of its substance which passes down along the backbone, are placed the subsidiary centres which deal, in the first instance, with the lower animal functions of motion, nutrition, etc. These, like all the others, are held in check by the higher centres above referred to.

We are now in a position to appreciate the evil effects which must result to the whole system from over-work of the brain. As the brain is now, so far as I know, always spoken of as the organ of thought, it is almost superfluous to add that by overwork of the brain I mean overwork of the intellectual faculties. In this age of over-civilization and over-refinement, of ceaseless hurry and worry, of ever-recurring examinations for young people, and of never-ceasing competition among their elders, when so large a proportion of the population is to be found crowded together in large cities, and when education is distributed by external pressure to the least fortunate members of the community, the organs of human

thought are subjected to an amount of wear and tear which could not have continuously affected so many members of the human family at any previous date in the history of the world. Let us examine more closely the conditions and the consequences of such overwork. The brain, like all other organs of the body, receives during health a supply of blood fairly proportional to its activity at any given moment. The blood vessels here, as elsewhere, are provided with muscular and elastic coats; and their calibre is, accordingly, under the control of the nervous system. Where the nerve centres themselves become exhausted by overwork, they necessarily lose this control more or less completely, according to the degree of previous strain. In the state of health, a resting organ of the body will be found to have its blood vessels contracted, and the part will receive but enough pabulum for a vegetative existence. Where the same organ is passing into a state of activity, its blood vessels will be found to dilate instantaneously, and a greater proportion of the nutritive fluid is allowed to pass through, to supply the necessary loss by wear and tear. These changes in the circulation occur in the brain as elsewhere; but here they are even more notable, as the blood vessels of the brain are thin-walled and yielding, beyond those of other organs. Also, as occurs in other organs, this increase of circulation, which accompanies functional activity, always promotes the healthy nutrition of the organ—up to a certain limit. Where this process of over-strain has been too prolonged, the coats of the blood vessels of the part partially lose their elasticity and are slow to recover their ordinary healthy contractility. When the stage of exertion has been too much or too often repeated, the walls of the vessels tend to approach a condition comparable to that of over-stretched india rubber, the minute blood vessels remain permanently dilated, a greater quantity of blood is found in them, but circulating more sluggishly; the exchange between the blood and tissues takes place more slowly, the circulation is less pure, the part is in a state of chronic congestion. As the nose of the tippler develops a tell-tale blush during the period of festivity, which, in the earlier years of enjoyment, afterward disappears—quickly at first, by and by more slowly—so is it with the brain of the over-read or over-worried man. In either case, the blush, after some time, tends to become permanent; and, in many cases, curious excrescences may form.

When such a state of circulation has become established in the brain, its functions are necessarily seriously impaired. The individual affected fails to preserve the same clearness of thought, the

same degree of mental energy, of readiness of resolve, of quickness of resource, and of capability of continuous and determined action, for which he may have been formerly distinguished, and which had been so important to him in the daily business of life. This intellectual deterioration may be a source of ruin to a man whose success in business depends solely on his own activity.

But, in addition to this failure of the mental powers, there is, as will be easily perceived, I think, by the reader who has noted what has been already said, a marked deterioration of the general health. The well-known physiological fact that mental work tends to check the secretion of the gastric juice, tells rapidly on the digestive functions of those anxious and worried individuals who cannot, or will not, allow themselves a fair amount of rest after meals. This habit, when continued, tends, with the restlessness and sleeplessness which torture the unhappy owner of an overworked brain, to reduce him to the state of a morose dyspeptic, whose life is a burden to himself and whose presence is unpleasant to others; and who has little to look forward to in life but the dreary accompaniments of a premature old age. Such are the evils which, with the innumerable smaller collateral ones, are brought on by the refusal to the organ of thought of its due share of rest. Such symptoms are commoner now than in former ages of the world; most frequently observed in the land of rapid progress—America; and induced oftener than in any other way by the too devoted worship of the almost universally presiding deity of this materialistic age—the Almighty Dollar.—From "New York Medical Journal," Nov. 21, 1903.

---

## IMPORTANCE OF FOOD INSPECTION AS A SANITARY MEASURE; AND A REMINISCENCE OF YELLOW FEVER.

By J. C. LeHardy, M.D.

Of all the measures for the protection of public health, none are more conducive to the physical and moral well-being of the inhabitants of cities than those calculated to prevent the sale of unwholesome foods, adulterated drinks and worthless medicines. To impure milk and the eating of spoiled meats and fish, of stale vegetables, and of fermenting or decaying fruits, may be attributed most of the summer complaints common to infants and children

and much among adults. Police records show that most of the unpremeditated brutal murders are committed by persons under the influence of alcoholic drinks, and from general statistics we gather that a very large per cent. of all the heinous crimes is attributed to the effects of vile liquors. Moreover, physicians of large experience assert that the want of success in the treatment, and, at times, even fatal results in cases of sickness, is due to the inertness, substitution, or adulteration of the medicines dispensed.

To the drinking of infected milk or polluted water epidemics of Asiatic cholera, typhoid fever and other dangerous diseases have been often traced. So marked have been the good effects of preventive measures against these dangers wherever they have been instituted, that progressive cities throughout the civilized world are now enforcing them; and many of the large centres of population have built extensive laboratories, where chemists and bacteriologists are employed testing and analyzing specimens of food and samples of water brought by citizens, physicians, or by inspecting officers. And others are occupied in preparing vaccins and antitoxins against or to antagonize dangerous diseases more or less due to such impurities.

These measures, however, involve too great an expenditure of money for them to be available to small cities and towns. Nevertheless, there are now in almost all parts of this country manufacturing chemists and biologists who possess facilities for making the most intricate analyses, accessible in emergencies, and prepared to furnish vaccins and antitoxins for the protection of the public health.

The need of this kind of protection being as urgent in the small as in the large centres of population, it becomes the duty of all civic authorities to provide food inspection, as well as other safeguards, to the people they have sworn to protect. It is well known that places not so protected become dumping-grounds where producers, jobbers and speculators get rid of articles they cannot sell in the open market. Dealers eagerly buy this class of goods, because the profits are enormous.

The most effective way of stopping the sale of any article of merchandise is to make such sale unprofitable to the dealer. To accomplish this, ordinances should be passed making it a misdemeanor for any person to keep, sell, or offer for sale, unwholesome food or food products; adulterated, drugged or made-up wines, liquors, spirits, beers and vinegars; any watered, mixed milk, or milk known to have been exposed to contaminating conditions;

inert, diluted or adulterated medicines; and ordinances to appoint officers to inspect places where these articles are kept for sale, to take sample for inspection or analysis, and with power to condemn, confiscate or destroy any article found to be dangerous to health or life; to indict and prosecute all persons violating any of the food ordinances.

Almost every village of any push nowadays has a health officer, who is expected to remove the causes of disease and promote works calculated to improve health and lengthen the lives of those he serves. But most generally the duties of that officer are restricted to hunting cases of smallpox and other contagious diseases, fumigation of premises, destruction of bedding, clothing, etc., and to compiling of mortality statistics. He has no power to act whatever; is poorly paid, and liable to be ousted with every change of administration. Under such conditions, how can sanitary laws be properly enforced? Here the health officer is a mere puppet in the hands of a board, sometimes called board of health, selected, not because of his knowledge of sanitation, but as a reward for political services, etc. The instinct of self-preservation, coupled with common sense, would, it seems, urge the people to insist on having an office, so important to the welfare of the entire community, filled by one whose moral integrity and firmness have been fully tested, one who has had some experience, and possesses an aptitude for that class of work. This office should be made permanent, and the occupant required to give the whole of his time to the duties of the office. He should give sufficient bonds to protect the corporation against losses due to neglect or otherwise; the salary paid him should be sufficient to make him independent, and enable him to execute his work without fear or favor.

### ORDINANCE DEFINING THE DUTIES OF FOOD INSPECTOR AND ASSISTANTS.

In addition to the other duties of a health officer, he should also superintend the work attendant upon food inspection. He should be required to enforce all the health laws and ordinances, select his subordinates, and assume the responsibility for their behavior and their work.

The health officer and his sworn inspectors shall have the power and are required to enter and examine every place, within the corporate limits, where food or food products of any kind are kept for sale; to condemn or confiscate any article of food which they consider to be unwholesome; if ill-smelling or dangerous to public

health they shall have it carted away at once and destroyed or buried. They shall carefully examine animals intended to be used for food, whether in transit, in stables or yards; if they are diseased they shall condemn them and send them off for treatment; if incurable they shall be killed and burned or buried at a safe distance outside of the corporate limits. It will be the duty of these officers to enter every grocery store, every market, green groceries and places where fish, meats, vegetables or fruit are kept for sale, every fruit and candy store, every restaurant or places where food is prepared or cooked, all the bakeries, cake shops, bar-rooms and places where wine, liquors, spirits, beer, vinegar or other articles used for drinks are made, kept or sold; all dairies, milk wagons and places where milk and milk products are kept or sold; all drug-stores and places where medicines are mixed, manufactured or sold; to take samples of any or every article found therein, giving his receipt therefor. The health officer shall carefully examine every sample brought to him by any citizen or inspector. If there exist any evidence of fraud or adulteration he shall at once test or analyze said sample, or cause it to be analyzed, by some competent and reliable chemist selected for the purpose by the authorities. From him he shall secure a certified copy of the analysis of each sample. When this analysis shows that the article has been fraudulently tampered with or adulterated, it shall be his imperative duty to at once confiscate said article, to indict and prosecute the person who furnished the sample; to bring said article with the analysis, and give his own and his inspector's evidence before the court, that all guilty parties may be dealt with in accordance with the provisions of the ordinances.

ORDINANCE DEFINING OFFENSES WHICH SHALL BE PUNISHED BY FINES AND IMPRISONMENT.

Any person keeping, selling, or offering for sale, any article of food or any product used for food, which is unwholesome, has been fraudulently tampered with, or adulterated, any liquid used for drinks that has been adulterated or substituted; any medicine that is inert, that has been substituted or adulterated; any milk known to be infected with the germs of disease or has been tampered with; any animal intended for food, if unsound or diseased, shall surrender any such article to the health officer or his deputies on demand. He shall be indicted and tried in a court having jurisdiction; if found guilty, he shall be fined one hundred dollars for the first offense and held in prison until this fine is paid. Should

the same person be convicted a second time, the fine shall be five hundred dollars, six months' imprisonment, and his or her license revoked.

In case any reputable citizen or official enters a complaint against the health officer or any of his inspectors, such complaint shall be fully and publicly investigated by the mayor and administrative board; if this officer or inspector is found guilty of fraud, of malfeasance or neglect, it will be the board's bounden duty to prosecute said officer, who shall, if convicted of neglect, pay a fine of one hundred dollars for the first offence; but when found guilty a second time, or the offence is malfeasance, the fine shall be five hundred dollars, with imprisonment until said fine is paid, and he shall be permanently dismissed from office.

There are ordinances upon the books of almost every corporate town and village against the sale of unwholesome food and adulterated drinks, but they are not enforced. Unscrupulous dealers taking advantage of the situation, sell to the unsuspecting or benign inhabitants second-hand and worthless goods: meat so spoiled that it is fit for a carrion only, wilted and fermenting vegetables, soft or partly decayed fruit, stale or mixed milk, when they should have been protected by those in authority. But when these people shall once understand that the health officer is responsible and can be prosecuted for neglect or malfeasance, it is likely that they will protect themselves, and more likely still that the health officer and his deputies will enforce the ordinances to the letter. In all matters where health and life is concerned, politics, and as far as possible, theory, should be turned out, and common sense and justice invited in!

MOSQUITOES AND YELLOW FEVER.

The mosquito theory, lately foisted in on our people as was the house fly years ago, instead of being a step in the right direction, simply tends to divert the mind from what has already been done to rid this continent of yellow fever, once a very formidable scourge. Such theory cannot change the nature or habits of that disease. It will neither prevent its recurrence nor diminish its fatality. As of yore it will recur in the epidemic form, starting in the hottest part of summer in some of the undrained and filthy localities within the yellow fever zone, and spread wherever the conditions for its propagation are favorable, in spite of the most rigid measures or best laid plans to "jugulate" it or to check its progress: fire, smoke, electricity, the booming of cannons (concussion), segregation, freezing, slaughtering the mosquitoes or house flies,

and what not, have all been tried *ad nauseam* from its first appearance in Boston (1696), repeated at the recurrence of every epidemic, to this very day, at Laredo. These experiments always failed, because yellow fever is a self-limited disease, which spreads for about ninety days, then gradually dies out, freeze or no freeze.

Yellow fever was more frequent and virulent in Boston, Providence, New York, Philadelphia, Baltimore, etc., at one period, than it is now in any of the Southern States. The mosquito, which in the seventeenth and eighteenth centuries thrust its venomous proboscis into the skin of the inhabitants when those cities were subject to yellow fever epidemics, still performs the same office and calls forth the same forcible expressions, but 'Yellow Jack" has left them many, many years ago!

The moment sanitation stepped in, and the people of large cities were given more space to breathe in, pure air, the filth removed, the streams purified and the wet lands drained, the ravages of yellow fever and of Asiatic cholera soon were things of the past.

To that great conflagration which destroyed a large portion of London (1665), soon after the loss of a great many of her inhabitants by the plague, the world owes the benefits of sanitary measures. In rebuilding the burned district, the streets were made wider, the yards more spacious, rooms better lighted and aired, sewers built, and the streets and yards kept cleaner. These changes were at once followed by an improvement in the health of the inhabitants and diminution of the death rate. The plague never returned. Cities on the continent, profiting by this example, got rid of the dread ogres one after the other.

After sustaining great losses by successive epidemics of yellow fever, the returns of which strict quarantine regulations had failed to prevent, the inhabitants of Boston decided on cleaning their town, and to transform the marshy lands surrounding them into truck gardens and productive orchards. Starting this good work in 1700, they witnessed the last attempt at an outbreak of the fever (a few cases) in 1805.

Baltimore was one of the first to follow her example and to get rid of yellow fever and of her rigid quarantine in 1818; New York followed, in 1822. Philadelphia, 1853. Norfolk planted strawberries on her drained marshy lands, using the city's filth as fertilizer, thus solving this problem, in 1855.

Charleston, S. C., which had suffered longer, more frequently, and sustained greater losses than any other city upon the South Atlantic coast, finally, after the epidemic of 1868, decided to give

sanitation a trial. A better and more extended sewer system was built. The drainage of the low and marshy lands near the town was pushed as rapidly as possible. While this work was progressing (1871) there occurred an outbreak of the fever, but the disease was mild and a small part of the city only was infected. From that date not a single case of yellow fever originated in that city.

Savannah's and Brunswick's last experience was in 1876; it was a costly one. Fully twelve thousand Savannahians had the fever; of these nearly one thousand died. Brunswick fared almost as badly. Extensive sanitary works in city and county were started soon after; a system of canals and open drains were dug in the vicinity of these towns to carry storm water to the river and to dry the low lands; large brick conduits to remove all storm water from the city, while a separate system of small sewers removed the liquid filth and human ordure from dwellings, etc. This work placed these two cities outside of the realm over which *Yellow Jack* still rules. From what has gone before, it is safe to assert that, as soon as the cities, towns and villages in the so-called yellow fever zone clean and properly drain their locations they will no longer suffer from the "American plague"; but in places where this is not done, where filth accumulates and the soil remains saturated or covered with stagnant water in summer will be just as liable to its visitations on "epidemic years" as they were two hundred summers ago.

Savannah, Ga., offers a graphic illustration of the effects which drainage produced upon the health, the diseases and the mortality of her inhabitants. Between 1800 and 1820 the low lands on both flanks of the town were planted in rice and indigo; these plants grow in water all summer; this water becomes putrid; the lands could not be drained. During this period one person died in every fourteen, 72 per 1,000. The prevailing diseases were (as recorded in the writings of Drs. Jones, Daniell and Waring) malarial, intermittent, bilious, congestive, and autumnal fevers. Pleurisy, rheumatism, dysentery. Malignant eruptive diseases were frequently met with. Black vomit was seen everywhere. In 1820 a severe yellow fever epidemic killed 600 of the 3,000 inhabitants. After this experience the town council prohibited the "wet culture," that is, of plants growing in water. The low lands were ditched, dried and planted in truck and other plants requiring dry culture.

This ditching outside the limits was started in 1821. In town, furrows were made in the streets with a plow, to prevent storm

water from stagnating. Simple and primitive as were these measures, the death rate soon dropped from 7.04 to 3.04 per cent., and with the improved methods in drainage, in the disposal of sewage, and the systematic and thorough removal of the garbage, human ordure, etc., the percentage continued to decrease. Among the whites it is now 1.05 per cent., or 15 per 1,000.

Just as sanitation was the main factor in ridding the civilized world of the plague, cholera, yellow fever, and other fatal diseases which counted their yearly victims by the millions, diminished the mortality, and increased the duration of life; food inspection, by preventing the use of unwholesome foods and drinks, will not only be the means of reducing mortality and increasing the term of life still more, but eating pure and healthy food, more than any other measure affecting the public health, must, by its effect upon the blood, greatly increase the physical powers and elevate the moral standard of the entire human race, the effect of which also will be to diminish the now rapidly increasing ratio of insanity and all sorts of crimes.

Savannah, Ga., December 20, 1903.

## THE SANITARY CONDITIONS AND THE DISEASES COMMON TO THE ISTHMUS OF PANAMA.*

By HERBERT O. SHIFFERT, Assistant Surgeon, U. S. Navy.

The sanitary conditions of Colon are very poor. There is no system of sewerage or other means provided by which refuse may be removed from the city limits. All kinds of garbage, slops, old clothes, and excreta are thrown out on the streets and in back yards, and judging from the size of the heaps accumulations for years must certainly exist in the latter places. The streets would be in a like condition but for the fact that vultures or carrion crows act as scavengers and represent the only street cleaning department. These piles of filth, which practically extend up to the back doors of all houses, did not in themselves seem to be a source of danger to the public health, the possible reason being that at the time no contagious disease existed; but should an epidemic of smallpox, for instance, visit Colon, then these heaps, together with the dirty habits of the people, would become at once a source of contagion perfect in all details. From a personal inter-

*From Report of the Surgeon-General U. S. Navy, 1903.

view with the health officer I found that dirt and filth were not the only dangers, for the law does not provide for either inland or maritime quarantine. During the months of January, February and March a rather severe epidemic of smallpox visited Panama, and at no time were precautions taken to prevent its spread. Passengers on the different trains were not inspected, isolation was not compulsory, and even simple house quarantine was not attempted. Relatives and friends visited infected patients, apparently without fear of the disease and certainly without fear of being subjected to any of the modern methods used to prevent its propagation. Men were frequently seen walking along the streets and even riding on the trains with a partially dried smallpox scab visible on their faces. Under the circumstances it seems strange that the disease did not appear in Colon; but the fact remains that up to the date of our departure no cases were officially reported. "Officially" is used, because I am certain that the disease did exist, but the health officer is so handicapped by politics and politicians that he has to wait until the proportions of a widespread epidemic are reached before any notice is taken of his warnings.

Ships entering the port are not boarded by health officers and bills of health issued to departing vessels are of no value, for although diseases may not exist, passengers often come directly from infected districts. With all these unfavorable surroundings and disregard for sanitary laws, there is one redeeming feature, and that is that the water supply is pure. The water is derived from a reservoir supplied by natural springs, and is conducted by means of iron pipes from Monkey Hill, the place of its location, to Colon, a distance of about eight miles. The reservoir and springs are fenced in, the walls and adjacent banks kept clean, and no habitations allowed on either watershed. In consequence of this, diseases due to impure drinking water, such as typhoid fever, dysentery, cholera, etc., are practically unknown. As this is the only water supply, the city bids fair to maintain this distinction. However, just before we sailed from the port an epidemic of dysentery, which was catarrhal in character, appeared, but could not with certainty be traced to the water. The waterworks do not belong to the city, but are the property of the Panama Railroad Company, from whom the city rents a few water stations, where the inhabitants may get a supply on the payment of a few cents.

The Isthmus, by which term I mean the country along the railroad, is in even a worse condition than Colon. The same general disregard for sanitary laws is present, and in addition the water

supply for small towns is impure. Water is obtained from small streams which are always polluted by privies, pig-pens, hencoops, etc. Many times I have seen natives drawing the water to be used for drinking purposes from a stream above which a privy emptied directly. For the first twelve miles along the railroad and proposed canal route the country is low and marshy and affords an admirable breeding place for mosquitoes, which are present in swarms, and among their number are a great many of the genus anopheles. The result is that malaria is endemic, particularly the pernicious type.

The diseases common to Colon and the Isthmus are as follows, and occur with frequency in the order named: Malaria; remittent, intermittent, and pernicious fevers; smallpox, yellow fever, catarrhal dysentery, leprosy, and elephantiasis.

Malaria, as has been said, is endemic, but becomes worse at the change of seasons, *i. e.*, in the months of May and June and November and December. Smallpox occurs frequently, and enough has already been said to show that conditions are favorable for its spread.

During the period this vessel remained in Colon no cases of yellow fever were seen or heard of; but from interviews with local physicians the following facts were obtained. It occurs in epidemics about once every three years, the epidemics varying in intensity. It never originates in Colon, but has been repeatedly traced to Panama and from thence to Guayaquil, the principal port of Ecuador. It is regarded as particularly fatal, and the physicians with whom I conversed stated that they never saw a case recover. The information in regard to this dreaded disease was very unsatisfactory, but I think that there is less yellow fever on the Isthmus and in Colon than is generally supposed. An effort was made to get the hospital records of the old French Canal Company, but they could not be obtained. I visited a hospital in Colon which was formerly used by the old French company when active operations were being prosecuted on the canal. The hospital is now turned over to the Sisters of Charity, and I asked one of them, who was a nurse under the old régime, if they had many yellow fever patients during the old canal days. She replied that they had great numbers and that all died. I was astonished when she informed me that one yellow fever patient was even then in the hospital. The supposed yellow fever patient certainly did not have that disease, but was dying from pernicious malaria. I am sure that if the truth was known a great many of the victims supposed

to have died of yellow fever during active work on the canal really succumbed to pernicious malaria.

Intestinal disorders seemed to be limited to what was known as epidemic diarrhea, probably simple catarrhal dysentery. It sets in with pains in the abdomen, the temperature rises to 100° to 101° F., the patient has from five to ten stools during the day, lasting for about three days. It responds readily to treatment, which consists of liquid diet, rest in bed, and large doses of subnitrate of bismuth.

Leprosy seems to have gained quite a foothold in the country, and the American minister at Bogota informed me that about 30,000 people are lepers and that no effort is made to isolate them. I saw but two cases on the Isthmus; both walked about undisturbed, and lived where they chose.

There are two hospitals in Colon; one referred to above as the old French hospital, is dilapidated and entirely unfit for use. The other is the property of the Panama Railroad Company. It is very small, accommodating about twenty patients, has three or four private rooms, and the facilities for surgical work are very poor. Patients from American men-of-war will be admitted if necessary, the charges being $2 per day.

If our Government intends to build a canal and chooses the Isthmus of Panama as the route, every physician who has seen the situation owes it to humanity to report the present sanitary conditions and give his ideas or opinions as to the best way in which death and disease may be avoided, both after and while the canal is in the course of construction. In order to save many lives, I believe it necessary to purchase five miles of territory on either side of the proposed route and thus have a sufficient area under the laws of the United States. The numerous small towns that now line the railroad would then have to abide by adequate sanitary laws, and the many ways in which disease is now propagated would then cease to exist. This would not only protect the laborer who will dig the canal, but after its completion protection will be afforded to those in transit, and so to the whole world. The next great object would be to rid the country of mosquitoes, either by draining the swamps and other infested places, or, if this cannot be done, by killing their larvæ by the best means which experience in our own country and Cuba has taught us. I do not believe the swamps can be satisfactorily drained until the canal is complete, for the reason that there is an enormous rainfall during the entire year, the only difference between the wet and dry seasons being

that in the latter it rains most of the time, while in the former it rains all the time. If it is found impossible to destroy the mosquitoes, then laborers and other individuals must protect themselves from inoculation by covering their hands with leather gloves and protecting their faces and necks by means of mosquito netting.

## THE PREVENTION OF EPIDEMICS.

By J. M. Cooper, M. D.

In the battle so valiantly waged against contagious diseases by the various health boards there is no feature so discouraging as the seeming indifference of the general public to the now well-known truth that some of the most fatal communicable diseases are entirely preventable, if the means advised by all sanitarians would be used to that end.

Chief among the constant, yet controllable, menaces to human life and happiness we find smallpox and typhoid fever, both of which, unfortunately, are too well known in Western Pennsylvania to need any graphic description at this time. The former is a malady so generally dreaded, owing to its usual loathsome character, that even the name—smallpox—conveyed to the mind by eye or ear, incites at once a feeling of horror.

And yet this disease, long since, in all civilized countries, should have been completely eradicated.

It is now over 100 years since Dr. Edward Jenner, of Berkeley, England, succeeded in convincing the scientific world of the inestimable worth of vaccination as a means of preventing smallpox, after 30 years of persistent effort in the face of bitter opposition and discouragement caused by the scoffing skepticism of those who should have been the first to proffer aid in his experiments.

It is a well-known historical fact that prior to this wonderful discovery smallpox was, for hundreds of years, one of earth's harrowing scourges, thousands dying from the onslaught of a single epidemic. It was the dread of the armies in those days, as its approach presaged a far greater loss of life than could be wrought by any martial foe. But notwithstanding the well-proven merits of vaccination, and so well established in the opinion of the best observers as to call forth the recent remark from a well-known writer on public sanitation, that "next to the rising of the sun, nothing is more absolutely certain than the fact that success-

ful vaccination, with reliable lymph, repeated with sufficient frequency, is a sure preventive against smallpox," we still have frequent visits from these epidemics, though not so destructive to life as formerly; occuring now mostly in the form of varioloid.

That this abatement has been brought about through the agency of vaccination there is no doubt, but if it were more frequently and more diligently applied, even varioloid would soon be stamped out. The fault is not now so much a lack of confidence in the efficacy of vaccination as an over-confidence in its power to produce a lifetime immunity, as the result of a single inoculation in childhood. This is very clearly shown in the preponderance in the number of adults who are, in the present day, the subjects of varioloid, although naturally, when unprotected by vaccination, the young are by far the most susceptible to attacks of smallpox; which all quite forcibly demonstrates the necessity of frequent, and, in the presence of an epidemic, universal, vaccination.

Smallpox is one of the so-called self-protective diseases, such as measles, chickenpox and a few others that are mostly the legacy of childhood, that is, a disease one attack of which renders the subject immune against a return, of like character, for life, with very few exceptions. Now, vaccinia, or cowpox, while it certainly protects against smallpox, and always modifies the attack, should it occur, is not in itself any species of smallpox in any grade or form, and therefore should not be expected to leave the same profound and permanent impress upon the system as the true disease. A person unprotected by vaccination or prior attack of smallpox, may contract the disease in its most violent form from exposure to varioloid, or modified smallpox, but the most direct contact with a case of vaccinia, or even with vaccine lymph itself, will not produce the true disease in any form. Hence the only sure protection to be derived from vaccination is in its frequent use. This is certainly not a very rigid exaction, in consequence of the benefits assured, and by a simple and absolutely safe measure, that seldom causes the loss of a single day from school or business.

As before stated, it is the robust and active adult who is usually exposed and subject to this disease. This occurs through the requirements of daily life, mingling in crowds, traveling in public conveyances, and from an unprotected state of the system by reason of the inefficiency of an effete vaccination. Children of the school age are better safeguarded in this respect, on account of the enforcement of the vaccination school law. Of course, there are always a few non-believers in the merits of vaccination, who prefer

to keep their children from school rather than submit to the requirements of the law. But the influence of this perverse minority is neither felt nor feared, for, in this enlightened age, it is not unbelief that is so much dreaded by the progressive part of a community, as indifference on the part of those who have the same interests at stake, and this is manifested not only as regards vaccination, but in every sanitary measure advised for the prevention or control of disease.

This is one of the enigmas of our modern civilization, which possibly may be attributed to the resentment arising from a supposed trammeling of personal rights and liberties, which strangely seems to apply solely to hygienic laws. All others are readily complied with, except by the criminal class, whose influence and example are not supposed to carry much weight in the efforts put forth for the general good of mankind.

The school laws, for instance, are always stoutly upheld, with all their entailed expenses, while, on the other hand, pecuniary aid, for public sanitation, is just as certain to be grudgingly given, when it has been known, and undisputed, since the palmy days of Greece and Rome, that the robust body is just as important a possession as the educated mind. The idea of waiting till the dog bites you and then killing him, instead of making a liberal use of tether and muzzle, seems to be adopted as the popular plan of dealing with contagious diseases.

But it is a fearfully fatal as well as expensive plan, and it is high time there should be some earnest thinking, with commensurate acting, along this line. In regard to protection from smallpox, no one need wait for the community at large, or even his neighbor, to act. Each individual can be his own and his family's protector by resorting to thorough and successful vaccination. But against typhoid fever the single citizen is not so directly the guardian of his own household, as this disease is nearly always caused by the use of impure water for drinking purposes, and in the larger and more densely populated centres, where typhoid fever is ever present, the water supply is generally regulated and controlled by municipal or private corporations. This, however, does not entirely release the individual from all responsibility in the matter, when he is once convinced of the dangers that exist and the culpable negligence of those in position to bring about a healthier and happier state of affairs. He can have his say and his vote, and should consider himself as particeps criminis if he fails to exercise both fearlessly and honestly when and where they will do the most

good. There is no reasonable excuse for any large town or city to continue the use of water where there is a question as to its purity, or where disease germs are known to exist. If the topographical conditions do not assure an adequate supply from mountain springs or artesian wells in the valleys, the filtering process, as a last resort, can and should be adopted, and if the proper germ filtration is faithfully used the number of typhoid cases will soon be reduced to a minimum.

It is officially estimated and affirmed that the annual number of typhoid fever cases is at least 3,000, and from 30,000 to 40,000 sick of this fever each year in Pennsylvania. Allowing an average of 36 days for each of these 40,000 cases we find that for every day in the year there is an army of 4,000 citizens of the State battling for life against the invasion of an enemy that is powerful enough to give the death blow to one-tenth of their number. This army of 4,000 is an aggregation chiefly of those in the prime of life, and not the dependents and physical weaklings of the commonwealth, or those hopelessly enfeebled by prolonged suffering from organic diseases. The robust and strong adults of the family, often the father or mother, whose daily support can be illy spared, are too frequently the victims of this prevalent and yet preventible disease, which being primarily enteric in its nature makes its attack upon those whose functions of digestion are most active.

As will be noted the statistics here given apply to the State at large, which means one death from typhoid fever to each 2,000 of an entire population of 6,000,000. But it is well known that in the cities the percentage is much greater, for instance in the small city of Meadville, with a population not to exceed 12,000, the number of deaths attributed to typhoid fever during the year 1902 was 12, one for each 1,000 of population; for Pittsburg and Allegheny, even their own citizens will admit the proportion of typhoid cases to the entire population to be equally as great as in Meadville, which would indicate that yearly there occur 500 deaths and 5,000 cases of sickness from typhoid fever in the twin cities of Allegheny county.

In Meadville the water supply from the Venango river has been pronounced impure by competent chemists. This happily is soon to be corrected by a change to pumping from a subterranean stream of absolutely pure water, and which is amply sufficient in volume for all the needs of the city.

Pittsburg and its adjacent cities have had enough typhoid for a

number of years past to give rise to a general and rather unfavorable criticism in that connection. The source of the trouble, as in all cities, doubtless is not hard to find, and it is to be hoped, as in Meadville, a remedy will soon follow.

The direct or indirect discharge of sewage into wells and rivers, as a contaminating source of disease, is too well known to need further comment. It is a hackneyed subject upon which the people are generally informed. It now remains for them to act. It is to be hoped we will all learn to appreciate the greatest blessing in the world—good health—which assures, in conformity with the well-known maxim, "a sound mind in a sound body," and which can only be had by the most diligent application of the rules of public sanitation. May the time soon come when the people will be willing to contribute freely and cheerfully to this grand achievement—the prevention of disease.—Pittsburg Post, September 6, 1903.

## CONFERENCE OF STATE AND PROVINCIAL BOARDS OF HEALTH OF NORTH AMERICA.

### Eighteenth Annual Meeting, Held at Baltimore, Md., October 23 and 24, 1903.*

The Conference met in the hall of the Medical and Chirurgical Faculty of Maryland, and was called to order by the First Vice-President, Dr. John Guitéras, of Havana, Cuba, in the absence of the president.

An address of welcome on behalf of the Faculty of the University of Maryland was delivered by Dr. JOHN F. CORDELL, who, in referring to the early medical history of Maryland, stated that the Medical and Chirurgical Faculty, organized in 1802, was the first body of the kind to give a formal indorsement to vaccination. As a matter of equal importance, he mentioned that papers were written in 1807 by John Crawford advocating and favoring the animalcular theory of disease. These papers were published in a non-medical journal, for the reason that the editor of no medical journal at that time would accept them. Crawford was erratic, but considered far ahead of his time. He was the first in any English-speaking country, so far as the speaker knew, to advocate the germ theory of disease. Crawford antedated Lister by at least fifty years, as a perusal of his writings would show this.

*From Special Report, "Medical Record," Nov. 7, 1903.

Dr. WM. H. WELCH, of Baltimore, followed with an address of welcome on behalf of the State Board of Health of Maryland. He said, among other things, there was another name which should be mentioned in connection with the medical history of Maryland that of John K. Mitchell, father of Weir Mitchell, whose book on the "Cryptogamic Origin of Malarial Fever" was really a classic. He thought Mitchell's name should be coupled with that of Henle, who forecast the doctrine of *contagium vivum.*

The First Vice-President responded briefly to these addresses of welcome.

*Etiology and Prevention of Infantile Diarrhea.*—Dr. JOHN H. MASON KNOX, of Baltimore, read a paper on this subject. He said no single organism was considered to be the cause of infantile diarrhea until the experimental work of Duval and Basset. Following Shiga's work in 1898 the dysentery bacillus was found to have wide distribution, and from year to year the distribution of the organism had been found to be more general. Reference was made to the investigations of Flexner in the Philippines in relation to dysentery among soldiers and the Shiga bacillus as a cause of it. Subsequent investigations made by bacteriologists in Germany, China, Constantinople, etc., disclosed the existence and prevalence of this bacillus in epidemic dysentery, so that its pathogenicity was now well established. At the suggestion of Flexner, the speaker and others undertook a series of investigations at the Wilson Sanitarium, and of fifty-three cases of diarrhea carefully examined, the Shiga organism was found in greater or less number in forty-two. Careful clinical examination, however, showed definitely that no one type of the disease could be associated with this organism, and that intestinal diseases of all types, common among children in summer, were caused by the same organism. Laboratory investigation had shown two or three types of organism very closely related. Thus far the great majority of cases in babies had been the acid Harris type. It was found that not only during the summer, but in the winter, sporadic cases of infantile diarrhea were associated with this organism. Wolfstein had reported thirty-seven sporadic cases of infantile diarrhea occurring in winter, and Basset four cases, seen in the Johns Hopkins Dispensary, due to this organism. Shiga, by the serum treatment, had reduced the mortality of dysentery from 20 to 30 per cent. to 10 and even 7 per cent. In twenty-five cases treated by injections of serum at the Wilson Sanitarium, some betterment was noticed after the injection in the cases that were seen early, but the improvement was not

brilliant or startling. In eight cases the serum had a beneficial action. In connection with the serum there were changes made in diet, and other medication was used, so that the results obtained were confusing in their interpretation. In cases of long standing, associated with an inflammatory condition of the intestinal tract, in which there was probably ulceration, blood in the stools, etc., the serum was of no avail. Although the serum treatment was not very beneficial, it was harmless, as no deleterious effect was observed in any of the cases.

*Are the Laboratory Methods of Diagnosis in Infantile Diarrhea Applicable in Public Health Work?*—Mr. EDWIN G. SCHORER, of Baltimore, in a paper on this subject, said that with the establishment of the etiology of infantile diarrhea, a great step in advance had been made, yet under the present conditions the new methods of diagnosis were not practicable in public health work. This last statement might, however, be modified, inasmuch as a bacteriological diagnosis would undoubtedly be of value in the limited number of persistent cases of diarrhea, and in those in which the antidysenteric serum was to be given. For this purpose the mailing case of Dr. Parks was to be recommended. The fact that, at the present time, the methods were not available for general diagnostic purposes, ought not to discourage any one from complying with any request boards of health might make. Much was still to be learned in regard to the dysentery organism and infantile diarrhea, a good share of which could be furnished by statistics obtained and facts learned from local boards of health.

Dr. WILLIAM H. WELCH, of Baltimore, said it was a surprise to him that Dr. Knox had found the organism, which had been proven to be the cause of a prevalent group of cases of dysentery, to be the cause of summer diarrheas of children as well. One did not think of the ordinary summer diarrhea of children as belonging to the same group of cases as adult dysentery. The organism must be found in other localities than Maryland in order to demonstrate that it had any causal relation to infantile summer diarrhea. The serum treatment of this disease, according to Flexner, was disappointing. The best results had been obtained in the treatment of adult dysenteries. Instances had been reported by Holt, Thayer, and others in private practice in which the serum seemed to have had a marvelous effect. Conditions in hospital and dispensary practice, however, were unfavorable for obtaining satisfactory results with serum.

Dr. HENRY M. BRACKEN, of Minneapolis, referred to the milk

question, saying in the larger cities it was difficult to get a pure milk supply. What was generally known as certified milk was one of the best articles of artificial diet for children. At present much attention was being paid in some cities to securing a pure milk supply by excluding tuberculous cows from dairies. But even this would not insure a pure milk supply, by any means. The testing of dairy herds for tuberculosis might be satisfactory to the dairymen and seemingly protect the people, but there were more infants that died every year from impure milk than from tuberculous milk. More attention should be given to the sanitary aspects of the dairy than to the diseased animal. Certified milk and Pasteurized milk were as satisfactory articles of diet as could be obtained at the present time.

Dr. JOHN N. HURTY, of Indianapolis, Ind., cited an instance showing that typhoid fever and dysentery (epidemic) could be conveyed by flies as well as by polluted water.

Dr. CHARLES O. PROBST, of Columbus, Ohio, considered it very important to disinfect the stools in cases of infantile diarrhea, although Dr. Knox had not referred to it. He understood Dr. Knox to say that the Shiga bacillus inhabited the healthy intestinal canal, and that under certain conditions of environment it might take on pathogenic properties. He asked whether this was so or not.

Dr. GARDNER T. SWARTS, of Providence, R. I., understood that the Shiga organism was easily killed in the presence of other bacteria, as the colon bacillus, which was a common inhabitant of the intestinal canal. If the Shiga organism was so easily killed in the presence of other bacteria, why did it prevail so extensively?

Dr. S. R. TOWN, of Omaha, cited an epidemic of diarrhea which occurred in Chicago many winters ago, which was caused apparently by the discharge of a large quantity of surface material into Lake Michigan.

Dr. JOHN N. HURTY cited a similar epidemic which occurred in Michigan City, Ind. There were no less than three thousand cases of diarrhea from polluted water.

Dr. HENRY D. HOLTON, of Brattleboro, Vt., thought that infantile diarrheas were considered gastrointestinal diseases, and that dysentery simply applied to bloody flux, which was not common in infants, but was sometimes seen.

Mr. FRANK WELLS, of Lansing, Mich., said the Michigan State Board of Health had published a leaflet on the subject of infantile diarrhea as the result of a report made by Prof. Victor C. Vaughan. This leaflet, which had been given wide circulation, advised that all

cow's milk given to infants shall be pasteurized. The leaflet was furnished to all the teachers of public schools in Michigan. It was the duty of boards of health, he thought, to furnish such information to the people.

Dr. HENRY MITCHELL, of Asbury Park, N. J., urged repeated inspections of cases of diarrhea in children and adults, as in cases of typhoid fever. The New Jersey Legislature had given the State Board of Health authority to make such inspections. A law had also been enacted that no milk shall be sold from premises on which there was an impure water supply. He pointed out how this law could be so interpreted as not to be effectual in its administration.

Dr. Knox, in closing the discussion, emphasized the importance of good milk and pure water for children, as well as adults. Common house flies were carriers of disease; they were a source of contamination in many instances. Proofs of this were abundant. Replying to Dr. Probst, he said the disinfection of stools in cases of infantile diarrhea was as essential as in typhoid fever. In speaking of dysentery he had not meant to confound it with bloody flux, as intimated by Dr. Holton. He used the term dysentery to include those cases in which the Shiga bacillus was found to be present. He could not answer satisfactorily the question of Dr. Probst relative to the Shiga organism inhabiting the healthy intestinal canal, but hoped Professor Welch would do so.

Dr. Welch said the Shiga organism was not present in normal stools. If it was, it was in such small numbers that it required the most painstaking investigation to find it.

Mr. Schorer cited an instance explaining why the colon bacillus killed the Shiga organism. The organism of dysentery was found in the mucous coat of the intestine, while the colon bacillus might be found in any part of fecal matter.

*The Duty of Sanitarians Regarding Venereal Diseases.*—Dr. HENRY D. HOLTON, of Brattleboro, Vt., read a paper with this title. He emphasized the duty which should be recognized by sanitarians as resting upon them, of doing something to restrict the venereal diseases which threatened society as no other communicable diseases did. The vital statistics of New York City in 1900 had a record of 31,145 cases of contagious diseases, with 11,368 deaths, of which only 177 were from syphilis. Blascho claimed 150,000 syphilitics for Berlin, and the Committee of Fifteen, 200,000 for New York City. To get an approximate idea of its prevalence the Prussian Government requested that all physicians should report on August 30, 1900, every case of venereal dis-

ease coming under treatment. These reports proved that three-quarters of a million people were afflicted yearly with venereal diseases in that country alone. He said the foregoing statements would prove that venereal diseases stood next in prevalence to tuberculosis and alcoholism, if they did not surpass them. They were permeating the very root of the population, tainting those yet unborn, maiming those born with the virus already in their blood, deteriorating the race, and devitalizing the individual. Instruction should be given in high schools and colleges, having reference to the prevention of these diseases. Dr. Prieto, in a paper read at the International Medical Congress at Madrid, suggested the following regulations to be enacted into laws: (1) The law to declare the infection of any person with any form of venereal disease to be a crime. (2) That such crime against the person be punished by indemnification and imprisonment for a period of two years. (3) When the offender could not indemnify the injured person by bearing the expenses of treatment, that the term of imprisonment or transportation be increased. (4) That the brothel-keepers be made to indemnify any person infected on their premises or by any of their licensed women, and in case of insolvency of the brothel-keeper, imprisonment or fine should be enforced. Dr. Holton thought the rules of Prieto stringent enough to control the evil. However, to enforce them would require an enlightened and educated public sentiment. He would educate the medical profession and educate the public, and follow this work by the enactment of wise laws which the educated public sentiment would insist should be thoroughly executed.

This paper was discussed by Drs. John S. Fulton, George R. Dean, G. P. Conn, Frank Wells, E. W. Cooper and Charles O. Probst. The general trend of the discussion was the necessity of educating the medical profession and the public in regard to the terrible ravages of venereal diseases and the practicability of limiting their spread by legislative enactment.

Dr. PROBST then offered the following preamble and resolution, which were adopted by the Conference:

*Whereas,* The great prevalence of venereal diseases, which is indirectly the cause of many deaths, is a matter of much concern to the public health; and,

*Whereas,* The communication of these diseases to innocent persons must be largely due to ignorance, be it

*Resolved,* That a committee of three be appointed by the President to prepare a leaflet that would be acceptable to physicians to

give to their patients, setting forth the precautions to be taken by one suffering from a venereal disease to prevent its communication to others, and to make such other suggestions as it may deem proper. Such instructions, when adopted by this Conference, to be recommended to State and Provincial Boards of Health for dissemination among the medical profession, and said committee shall report at the next meeting. (Committee unannounced.)

*Another Year's Test of the Mosquito Doctrine of the Transmission of Yellow Fever in Havana.*—Dr. JOHN GUITÉRAS, of Havana, Cuba, said there had not been a case of yellow fever in Havana for the past two years except those that had been imported from other countries, chiefly Mexico. He then detailed the methods employed in combating this disease in Havana, which are familiar to our readers.

*Report of Committee on Promotion of Uniformity of Reports upon Vital Statistics.*—Dr. CRESSY L. WILBUR, of Lansing, Mich., presented this report. In the division of labor between the committee representing this Conference and the committee of the American Public Health Association, American Medical Association, and others interested in the improvement of vital statistics, the special task had been selected of examining and reporting in regard to the forms of tables and general manner of presentation of statistical data employed in the annual, biennial, weekly, monthly, or other reports of States and cities. In this the U. S. Census Bureau had co-operated and had collected samples of the forms at present in use in nearly all of the registration offices of this country for the purpose of analysis and study by this committee. It was a difficult task to consider all of the forms in a comparative way, but it seemed desirable to do so before formulating a report as to the absolutely essential tables that were to be recommended for use in the various reports. The committee, therefore, reported progress and requested that additional time be granted for making a final report, which could probably be prepared before the next session of the Conference. In addition to the work outlined above, the committee had co-operated, on behalf of the Conference, with the committees of the American Public Health Association and of the American Medical Association, the U. S. Census Bureau, and the Public Health and Marine Hospital Service, in the preliminary work for the co-operative study and improvement of the international classification of causes of death, a report upon which would be presented at the session of the American Public Health Association next week, and also for the extension of adequate registration laws. The report was accepted.

*Transportation of the Dead.*—The conference adopted a set of rules, which it was proposed should be established by legislative action, to govern the transportation of dead bodies.

*Officers.*—The following officers were elected for the ensuing year: President, Dr. John N. Hurty, Indianapolis, Ind.; Vice-President, Dr. John S. Fulton, Baltimore, Md.; Secretary, Dr. Gardner T. Swarts, Providence, R. I.; Treasurer, Dr. James A. Egan, Springfield, Ill.

The time and place for the next meeting were left to the officers of the Conference to decide.

## FINAL REPORT OF THE COMMISSION ON ADDITIONAL WATER SUPPLY FOR THE CITY OF NEW YORK.

For $98,839,000 the city of New York can be provided with a daily supply of 500,000,000 gallons of filtered water, delivered by gravity through a high level aqueduct to a large reservoir at the north end of the city at an elevation of 295 feet above tide water, thus supplying the highest parts of the city by natural pressure. For $60,098,000 a daily supply of 320,000,000 gallons, under like conditions, can be provided. Such are the estimates of Prof. Wm. H. Burr and Messrs. Rudolph Hering and John R. Freeman, Members American Society Civil Engineers, in their final report on an additional water supply for New York City.

The preliminary report of the commission was published in full in "Engineering News" of October 1, 1903. The final report was recently completed, and we are indebted to the commission for an abstract of it, and for a map showing the location of the various reservoirs, the filters and the aqueduct. The brief abstract of the final report covers much the same ground as did the long preliminary report, but the final report contains conclusions and estimates of great interest.

The commission was instructed to report on water waste restriction, as well as on an additional supply. It advises that the investigations of consumption and waste, under the immediate supervision of Mr. Nicholas S. Hill, Jr., Chief Engineer of the Department of Water Supply, Gas and Electricity for Manhattan and the Bronx, be continued, and that a system of thorough inspection should be installed, as well as a large extension of meters, not only in buildings, but also so placed upon the street mains as to divide the city into districts, the quantity of water flowing

into each being measured. By these means it is believed that the greatest possible reduction in waste will be attained. As a matter of fact, the present investigations do not show nearly as much waste as has sometimes been anticipated. The leakage from street mains has so far been found to be small, the chief waste appearing to arise from leaky fixtures and defective plumbing in buildings. The total actual amount of leakage and waste discovered scarcely exceeds about 40,000,000 gallons daily for the Boroughs of Manhattan and the Bronx. As the consumption of Manhattan and the Bronx at the present time is about 285,000,000 gallons daily, that waste represents about 15 per cent. of the consumption.

*The Proposed Gravity Supply.*—The general outline of the plan for a new gravity supply, with a summary of the estimates of cost, is presented in the abstract of the report as follows:

The Commission favors taking a first instalment of 600,000,000 gallons from the Fishkill watershed, but developing concurrently the supply from Esopus creek. These two sources would give nearly 320,000,000 gallons per day. Another 100,000,000 gallons per day may be secured from Rondout creek without great additional expense, making a total supply of nearly 420,000,000. The final 80,000,000 gallons or more may be obtained from Wappingers creek by means of a large reservoir at Hibernia, within the drainage area of that creek, thus completing the amount of 500,000,000 gallons per day. If it should be desired, a further large supply can be obtained from the upper watershed of the Jansen Kill, on the easterly side of the Hudson, and from the upper waters of Schoharie creek, diverted into the watershed of the Esopus creek, and from Catskill creek.

The waters of the three creeks on the easterly side of the river are much harder than the Croton water, but the waters of Rondout and Esopus creeks are remarkably soft and desirable for city supply. It has been the Commission's plan to deliver to the city the soft waters of the Catskill mountain streams, so as to reduce the hardness of the combination with the waters on the easterly side of the Hudson, thus securing a supply equally soft as the Croton water.

The Commission is strongly of the opinion that after the waters of the streams now recommended for use are taken, Hudson River water should be secured by pumping it out of the river near Hyde Park up to the suitable reservoirs and filters on the high land easterly of the river, so as to deliver it to the city at the required elevation. This, however, is in the remote future, and is set forth as a

resource in reserve at that time. In such a development it will be necessary to build large storage reservoirs in the Adirondacks, from which flood waters of the Adirondack streams may be released during the summer flow of the Hudson, so as to prevent any salt water from reaching the point where the pumps would take the river water. It is explicitly stated in the report that the filtration of Hudson River water would render it entirely satisfactory for all purposes.

*Summary of Costs.*—The works recommended to be constructed first comprise a section of the Hill View Reservoir, of 600,000,000 gallons capacity; the main aqueduct, of 500,000,000 gallons daily capacity; from that reservoir to Stormville Reservoir; a section of the Stormville filters, of 50,000,000 gallons daily capacity; the twin aqueduct, one channel of 400,000,000 gallons and the other of 250,000,000 gallons daily capacity, from the Stormville Reservoir to the Billings Reservoir and these two reservoirs. This construction will afford an additional supply of 60,000,000 gallons per day. Concurrently with the preceding construction, the aqueduct of 400,000,000 gallons daily capacity should be built from the Billings Reservoir to the Ashokan Reservoir, and at the same time the latter reservoir should also be under construction.

It is estimated that the first part of this work, *i. e.*, extending from Hill View Reservoir to Billings Reservoir, may be built, under efficient management, within five years, and that the second part of the construction, extending from Billings Reservoir to the Ashokan Reservoir, may be completed within the same period, if the labor market affords sufficient force and the money is provided.

The summary of costs of this construction is as follows:

RESERVOIRS.

| | | |
|---|---|---|
| Hill View covered reservoir, first section of 600,000,000 gallons capacity.. | $9,059,000 | |
| Stormville filter plant, first installation of 50,000,000 gallons daily capacity.... | 3,581,000 | |
| Stormville reservoir, 10,000,000,000 gallons capacity ..... | 2,503,000 | |
| Billings reservoir, 6,800,000,000 gallons capacity ..... | 1,806,000 | |
| Ashokan reservoir, 66,500,000,000 gallons capacity ..... | 11,734,000 | |
| Total ..... | | $28,683,000 |

HIGH LEVEL AQUEDUCT.

| | | |
|---|---|---|
| From Hill View to Stormville filters.... | $18,755,000 | |
| From Stormville to Billings, twin aqueduct ..... | 3,584,000 | |
| From Billings to Ashokan, including Hudson River crossing..... | 9,076,000 | |
| | | 31,415,000 |
| Total cost of construction..... | | $60,098,000 |

These estimated costs include actual contract and all other expenditures, except those for damages to water rights. These works will afford an additional supply of nearly 320,000,000 gallons daily.

It is estimated that the complete construction of reservoirs, filters and aqueducts for the full additional supply of 500,000,000 gallons per day may be required by 1925. The cost of the remaining construction in excess of that already provided for will be as follows:

RESERVOIRS.

| | | |
|---|---|---|
| Hill View Reservoir, completed to 2,030,000,000 gallons in 1925..... | $4,110,000 | |
| Stormville filters, completed to 500,000,000 gallons daily capacity in 1925... | 11,065,000 | |
| Hibernia Reservoir, 30,500,000,000 gallons capacity..... | 9,308,000 | |
| Silvernails Reservoir, 17,200,000,000 gallons capacity ..... | 5,530,000 | |
| Total ..... | | $30,013,000 |

AQUEDUCTS.

| | | |
|---|---|---|
| Additional cost for completed aqueduct between Hill View and Stormville... | $1,510,000 | |
| Additional cost for completed aqueduct between Billings and Ashokan..... | 4,369,000 | |
| Aqueduct from Billings Reservoir to Hibernia Reservoir, 300,000,000 gallons daily capacity..... | 1,573,000 | |
| Aqueduct from Hibernia to Silvernails, 220,000,000 to 330,000,000 gallons daily capacity ..... | 1,276,000 | |
| | | 8,728,000 |
| Total cost of additional construction is..... | | $38,741,000 |

These additional costs, like those covering the first portions of the work to be constructed, include all expenditures such as those for land, clearing reservoir sites and other similar costs except water damages along the streams from which the additional supply is taken.

The total cost of the entire works required to deliver the additional high service supply of 500,000,000 gallons per day will be the sum of the two preceding totals:

Total cost of entire work.....$98,839,000

If instead of developing the Jansen Kill it should be considered preferable to take the soft waters of Rondout Creek, the preceding estimates of cost would be modified to the extent of substituting the expenditures necessary to secure the Rondout water for those required to secure the Jansen Kill water. The Commission believes that this procedure will be found to be preferable; but the impossibility of completing Rondout surveys does not permit accurate estimates to be made for securing the Rondout water.

The needs of the city, the Commission states, demand the immediate beginning of construction. This can be so carried out as to deliver 60,000,000 gallons a day into the Croton drainage area in about five years, the shortest period during which long tunnels through the mountains east of Peekskill could be built. The construction required for the full supply of 500,000,000 gallons need not be completed before 1925.

The high pressure gravity supply would not only eliminate the need for pumping in Manhattan and the Bronx, but would also furnish "a supply for special fire mains, thus affording much better protection against fire than any salt water fire system."

*Brooklyn, Queens and Richmond Boroughs.*—As to these boroughs, the abstract of the final report says: For Brooklyn and Queens, an immediate development of the ground water sources of Queens and Nassau counties is recommended, and that all surface supplies be filtered, also that ultimately these Long Island sources be supplemented by a branch conduit from the proposed 500,000,000-gallon aqueduct from the north of Manhattan.

For Richmond, the Commission has approved of a ten-year contract with a private company for the immediate introduction of filtered water from New Jersey.

Queens, the Commission says, already urgently needs more water, and the Borough of Brooklyn has also reached that point where it must have additional water of good quality. It has al-

ready begun to filter its present surface supplies, which are more or less polluted by the increasing population of the southern portion of Nassau County.

The Commission takes a strong stand on the value of well-chosen underground waters, points out the high character and large amount of underground water stored by nature on Long Island, and mentions briefly the large amount of work done under its direction in the way of studies of these underground sources. These studies have covered 1,000 square miles of territory, and have included observations of the water levels in nearly 1,500 wells.

*Filtered Water for the Whole City.*—The Commission practically asserts that at the present time no municipality can be considered satisfactorily supplied with water until that supply is either filtered artificially or naturally, as in the case of ground water.

Its recommendations include an ultimate filtered (natural or artificial) supply for the whole city, and it strongly urges that works for the filtration of the Croton supply be begun at once. It also advises that the reservoirs in Central Park be cleaned and that they be roofed over as soon as the Croton supply is filtered.—Abstract from "Engineering News." December 24, 1903.

## THE PROBLEM OF KEEPING NEW YORK CITY'S STREETS CLEAN.*

By Dr. JOHN H. WOODBURY, Commissioner of Street Cleaning of New York.

*Former Conditions.*—Dr. Woodbury gave a series of stereopticon pictures in which he showed the condition of New York streets when he took charge of them two years ago. Hester street, at that time, was a crowded thoroughfare constantly filled with a compact mass of people, crowded around the push carts, so that it was impossible to properly clean it. Rivington street was the same way. Along the curbs of both these streets there were open market carts, adding further by their refuse to the difficulty of cleaning the streets and keeping them clean. Dr. Woodbury dwelt on the fact that streets were the public highways and that the abuse which allowed push-carts in large numbers on them was an unwarranted diversion from the true purpose of maintaining a thoroughfare.

*Establishment of Fish Market.*—On Rivington street especially,

*Abstract of paper read at special meeting of New York Academy of Medicine, December 3, 1903.

the nuisance of the push-carts became greatest, because here all the fish food was sold for the neighboring streets of the crowded lower East Side. Fish in all stages of decay were offered for sale in the midst of a dusty, dirty thoroughfare, and the waste material from the sales inevitably found its way to the street to add further to the noisomeness of the conditions. In order to do away with this nuisance and make the maintenance of clean streets in this neighborhood possible, Dr. Woodbury established Rivington Street Fish Market, beneath one of the arcades of the new Williamsburg Bridge. At first it was impossible to make the foreign-born peddlers understand that this new market was intended for their use without any payment. After a few of them had experienced what was the real purpose of the change the others flocked in, and now it is not so difficult to keep the streets clean and clear in the neighborhood. Dr. Woodbury insists that other such improvements must be made in other parts of the city, and that markets for other food materials must also be established. Many food materials have been sold from these push-carts on the open streets, and the number of germs present in the air in these crowded thoroughfares makes this eminently undesirable. Bread, cakes, biscuits and candies are exposed, and various forms of delicatessen. The children are likely to suffer most from such street-exposed food, as they are least resistive to bacterial invasion, and are less likely to be squeamish about what they eat. Thus the matter of street cleaning becomes very important in the summer time for the maintenance of the public health. It must not be forgotten that a city's health is the function of its most unhealthy portions, and that the slums of the lower East Side may easily prove a source of infection even for upper Fifth avenue.

*Street Cleaning Methods.*—The Commissioner of Street Cleaning must maintain the cleanliness of 1,076 miles of streets. In the more crowded portions of the Borough of Manhattan, particularly, many of these streets must be cleaned twice a day. Wherever the old block pavement remains the only possible way of securing cleanliness is by the man with the broom, the shovel and the bag. In very crowded streets the same thing is true. It is impossible to send a street-cleaning machine through Fifth avenue in the busier portions of the day. The employment of so many men requires organization and *esprit de corps*. The men employed must be treated as if part of a military company and discipline maintained by military methods. So much was accomplished in establishing this system by Colonel Waring, however, that now it is not diffi-

cult for his successors, if they have the good will, to maintain it. It is important that asphalted streets should be thoroughly cleaned, in blusterous weather particularly, as the dust from them is likely to be even more noticeable than from rougher paved streets. The dust represents to the medical men a collection of many kinds of germs. For cleaning asphalt, when the temperature is above 50°, the only thing that is effective is a stream of water delivered at high pressure over the surface of the pavement. For this purpose street-cleaning apparatus in which water can be kept at a pressure were invented by the French, and are now in use in this city. Several of them were exhibited in pictures that delivered a stream of water under 20 atmospheres of pressure. This forces the water toward the gutter line and thoroughly cleans the street. Water wagons are also employed, in front of the tank of which there is a gas engine, by which a pressure of 100 atmospheres can be secured in the water tank. This cleans asphalt very effectually. So far a lack of sufficient appropriation for the purpose has made it impossible to secure more than a few of these.

*The Ash-Cart Nuisance.*—Up to the present time the loading of ash-carts and the carting of ashes along the streets in the open carts has been one of the great city nuisances. Clouds of fine dust were blown about to settle on everything, to be raised again by the wind and be a continuous bother and irritant for respiratory passages. On a March day a goodly proportion of the ashes seemed to get back into the air. The attempt to abate the nuisance by means of a cloth cover proved a failure. For a time then a wooden cover was employed, beneath which the dumping of the ashes could be secured. As a result of various trials and experiments Dr. Woodbury has finally adopted a large steel wagon completely covered, and with a roll-top desk opening. This not only abates the nuisance of dust, but gets rid of the unsightliness of the old vehicle.

*Disposal of Garbage.*—Under the old system of carrying the garbage out to sea in dumps and scows there were many serious objections. Much of the material was carried back into the next tide to decorate the bathing beaches in the neighborhood of the city, and be not only a nuisance, but a source of danger to health. The floating material from these scows made the waters near New York unsightly, and the solid material, in the opinion of experts, was sure eventually to create a bar just at the entrance of the harbor. Under the system introduced by Dr. Woodbury these objections are all done away with. All the garbage material contained

in the ashes is taken out and the ashes are used for filling in near Riker's Island. Already a large amount of new ground has thus been made which will eventually be very valuable. In the meantime the dumping scows, especially those of the Delehanty pattern, are held in reserve for emergencies in case the present system should prove insufficient for some special reason, as, for instance, if a fire or some other serious unforeseen accident should cripple the department's resources.

*Classifications of City Waste.*—There are three classes of city waste that must be disposed of, each of which requires some different treatment. These are garbage, rubbish and ashes. By garbage is meant the kitchen waste of houses and hotels, commonly called swill. By rubbish is meant all the household material that, being no longer of use, is left to the street-cleaning department to dispose of. This includes beds, bedding, old furniture, old trunks, boxes and receptacles of various kinds, of different degrees of uncleanliness, and all the broken material of the household. Under ashes is included, of course, a certain amount of broken material, tin cans and other articles that do get inevitably into the ash pans.

*Garbage Disposal.*—All the swill material is now taken to Barren Island. This is all organic and extremely offensive material. Here, by means of a reduction process, the watery material and gases are taken out of it, and a compressed, inodorous residue obtained after the digestion of all the organic material. In order to prevent the nuisance, formerly so marked, all ill-smelling smoke from the Barren Island plant and the gas from the digesters are thoroughly washed before being allowed to escape into the air. This unfortunately leads to the loss of an immense amount of valuable ammonia. The sweepings of streets and other organic material constitute the best of manure and is now sold in quantities to many parts of the country. This forms a constant source of revenue.

*Rubbish.*—This material often contains articles that may still prove useful and always has in it an immense amount of valuable material for fuel. The handling of it is no longer not only not an expense, but is a source of revenue to the city, since a contracting company more than pays for the collection of it for the permission to take out of it any material that may seem of value. The residue is now being used for heating purposes and will surely prove of value. Even after the rubbish has been burned the residual ash has such a high potash content that it is an extremely valuable material.

*Disposal of Ashes.*—On February 14, 1902, the department began to dump ashes into an open crib near Riker's Island, for the purpose of increasing the size of the island. Sixty-three acres have so far been reclaimed from the ocean very effectually, though certain problems have had to be solved that were unexpected. The East River is deep and clear, and has little mud, but a strong tide. The setting in of this tide makes work difficult at Riker's Island, and one one occasion, at least, caused considerable damage to the construction work there carried on. The distribution of ashes and the leveling of the new-made ground is confided to convicts, the labor being cheap, but quite as poor as it is cheap. The convicts employed are mainly the tramps and vagrants. Belt conveyances are employed to distribute the ashes at a distance from the barges, and so far there has been excellent results obtained from them.

*Street Bacteriology.*—By exposing agar plates at varying heights from the ground, Dr. Woodbury succeeded in getting bacteriological maps of the atmosphere in the most thickly settled district. Hester, Rivington and Oak streets gave so many bacteria after thirty minutes' exposure that not more than fifteen minutes of exposure could be employed, and even then many hundreds of bacterial colonies developed on each plate. Exposures of the same kind made on upper Fifth avenue and Madison avenue gave very few bacteria and only a few molds. Pell street was found reasonably clear of bacteria, though containing a number of molds in the atmosphere. John Chinaman is not unclean, though the presence of organic products in his neighborhood, when living in thickly settled districts, may invite the presence of molds. Mulberry street, in the Italian quarter, gave an uncountable number of colonies after fifteen minutes' exposure, and a single hour's growth in an incubator. Washington Market proved to be nearly in the same condition, and the photograph of the plate taken shows what danger there is in the exposure of moist food products in the air under such circumstances. Many food materials are almost as good nutrient media for bacteria as agar is. As a rule the number of bacteria are directly proportional to the denseness of population in a given neighborhood. As a rule, too, these thickly populated districts fairly swarm with children. This adds to the danger to the health of the individuals, because the population contains such a large proportion of the young non-resistive elements. It is not an unusual thing on the lower East Side to have 20 families to every 25 feet street front, and these 20 families will number at least 50 children among them. This gives a better idea for the

necessity of cleanliness in these thickly populated neighborhoods and for the special vigilance of the Street Cleaning Commissioner, if the Board of Health is not to have its work greatly added to.

*Utilization of Rubbish.*—An experimental plant for the separation of whatever useful materials there might be in the rubbish collected in the street cleaning departments and the burning of all inflammable material has been established at Forty-ninth street. This furnished enough heat units to supply lights for the stable at Fifty-second street, leaving a large surplus of heat to be wasted. The bill for lighting this stable before was nearly $6,000 annually. This is a direct saving. It formerly cost the city about $500 a week to get rid of this material, while now the revenue from those who have the opportunity to select whatever useful material there is in it is $250 a week. When to this is added the new saving in the matter of lighting, the city will find this material an important source of revenue.

*Experimental Work.*—This is only experimental as yet, but there is no doubt that on a large scale it will prove even more lucrative than has been represented. The plant is situated on a dock over the river; it is inefficient according to our present scientific knowledge; it is not well located; it is not industrially well arranged, yet at the present time it is actually saving the department over $10,000 a year. This gives some idea of how much can be accomplished when the problem is approached scientifically. It is surprising how much of the waste material can be used over and over again. Even the tin cans that form so large a part of the rubbish collected by the Street Department are now shipped to a factory on Long Island, where, by means of heat, the solder and tin are melted off to be again utilized. Even the steel plates are not entirely useless, and are used for roofing purposes and other objects.

*Problem of City Lighting.*—One of the largest items of expense which the City Government has at the present is that of lighting. There is no doubt that much of this can be supplied by plants erected in connection with the rubbish disposal plants. As a consequence of this, too, the boxes and barrels, the floating material of various kinds that formerly used to be taken down the bay, and, after dumping into the ocean, floated back with the tide to be scattered over the beaches, making an unsightly condition and a very unhealthy state of affairs for the bather, can be destroyed under absolutely aseptic conditions, and their usefulness as fuel is easy to understand. Of course, during the two years that Dr. Woodbury has been in charge of the department only a beginning

of this scientific treatment of refuse has been instituted. The new administration, however, will find this beginning of such a nature that they can easily raise a superstructure of important retrenchment for the city within the Department of the Commissioner of Street Cleaning.

## STEPS IN ATTAINING THE PHYSICAL IDEAL.*

By MARY FRAZEE.

In the working out of any purpose there are the three elements of a race: namely, a starting-point, a goal, and the movement from the one to the other. Stated more psychologically, it may be said that in the working out of a purpose there are three steps:

1. A consciousness of the self as limited in an undesirable way.

2. A mental image of the self as freed from the undesirable limit.

3. The selection and execution of the means necessary for the removal of the limit.

To illustrate:

1. An inebriate realizes that he is a slave to appetite; he is conscious of himself as limited in an undesirable way.

2. He imagines how it would seem to be master of his appetite; he imagines himself as free from his limitation. To realize himself in this freed condition now becomes to him an ideal.

3. He chooses and proceeds to execute the means necessary thus to free himself from his limitation and realize his ideal—he builds up his will power and his health in every way until his appetite is overcome.

Again:

1. A man finds himself hanging through accident by his clothing over the edge of a precipice—he is conscious of an undesirable condition of the self.

2. He idealizes himself as in a position of safety; he images himself as he would be if his limitation were removed. He compares condition 1 of the self with condition 2; he prefers himself in condition 2. He sets up condition 2 as an end to be reached.

3. He selects, according to his best judgment, the appropriate means and activities to transform his actual condition of peril to his ideal condition of safety; he proceeds to execute the selected

*Written for "Suggestion," December number, from which it is reprinted.

activities. By means of such selected activities he moves from point 1 of his experience to point 2; he finds his limitation gone—he realizes his ideal.

Whether a purpose set up be one to be accomplished in the individual or his environment, the three steps in reaching it are invariable. There is always first, a feeling of dissatisfaction—a consciousness of the self as limited undesirably; second, the setting up of the ideal, the thought of freedom from the limit; and third, the employment of the necessary means and activities to make the ideal condition actual. These are the steps by which we have accomplished all other things, and they are the steps by which—in the race and the individual—the physical ideal is to be attained.

I.

The average sick man would probably say that so far as the first step is concerned, he has no difficulty. He is quite aware of a feeling of dissatisfaction; he is conscious of himself as limited in an undesirable way. But precisely at this point he makes his first mistake; he is so engrossed with his actual condition, or what he believes to be his actual condition, that he fails to turn toward the ideal condition. His attention is riveted upon his immediate sensations. He thinks more of his present undesirable state than he does of his future deliverance. Now it bodes no good to a race if the runner be so absorbed with his starting-point that he fail to look toward the goal. A starting-point is only a thing to move away from; the sole purpose and use of a starting-point is to furnish a place to be left behind. Pain is only the sick man's starting-point to health. A glance at the nature of feeling shows the truth of this.

The purpose of sensation of any kind is only to indicate that something is to be done. *Feeling is only a hint to action.* It is the demand of the organism for some readjustment to its environment. A feeling of hunger is simply a notice that the maintenance and furtherance of the self requires that food be taken. The feeling of pleasure aroused by listening to a Brahms recital is an indication that to listen to fine music is conducive to a high degree of development. To use a more common illustration—and one of sight sensation—to see a mud-puddle in the path is a suggestion to walk around it. All that we see and hear and taste and smell and feel—all sensation—is to show us something that our well-being demands we should either reach out after or avoid. This—the temporary sensations of pleasure from the indulgence of depraved

appetite excepted—is the psychological meaning and evolutionary value of sensation. To keep attention fixed upon suffering itself is not only to aggravate and intensify that suffering, but it is to wrongly interpret its meaning. It is only a starting-point, a stimulus, a hint, an invitation to something better.

II.

And that something better is health, strength, physical perfection—the realization of the Physical Ideal. It is possible to be reached by mankind because it is necessary to be reached. The continuance and furtherance of the race depend upon it, and whatever the continuance and development of the race has demanded has been realized. For Nature to say that a thing must be done is to say that it can be done. We are compelled only as we are enabled. In setting up a purpose to realize physical strength we are acting with, not against, the resistless and inexorable forces of Nature, that, working both within man and about him, have made him what he is.

If this truth could only be generally realized—that Nature's purpose for us is health, that the forces she would put at our disposal are absolutely dependable and only await our mastery—it would mean that an innumerable army of sick would rise and come forth; it would mean a new hold on life for the well; it would mean the physical regeneration of the world.

Such is the glory and the promise of the Physical Ideal. In such manner does the goal lift up its shining heights. Merely to look upon it, to become absorbed in the light of it, to turn toward it with a great purpose—is to bring it near. Indeed, only to become thoroughly saturated with the thought of health—its freedom, its vigor, its bounding joy—is sometimes at once to reclaim it; for with marvelous quickness and without conscious effort the body may respond and claim its own.

Whoever in this world helps to hold before mankind the ideal of physical perfection is by that deed a benefactor. It is in this way that the "divine healer" does good, the "magnetic healer" makes cures, the Christian Scientist gets results, the mental scientist and all his tribe help and heal. For they all, according to their light, with varying degrees of high intelligence or of childish ignorance, are holding before the people the thought of health. And health is as contagious as disease. Stripped of theological and other accessories in the hand of the Suggestionist, and scientifically applied, this same law works out its beneficence. Of whatever

name or character or degree of ability, these people are in some measure proving, first, that man has control of the same forces to build up his body that he has to build a ship or a house or a government; and, second, that the mental process in all is essentially identical.

The first thing, then, for the man who would be well, is with earnestness and strong desire to fix his heart and soul and utmost purpose upon *being* well. It is with supreme assumption to take command of his bodily forces until they are ready to obey his will. It is continually to be forgetting the things that are behind, and pressing toward the mark that is on ahead. It is to repudiate and ignore, and laugh in the dread faces of discouragement and despair. It is with confidence and boldness to lay hold of life.

III.

And this he is to do by putting his thought into action. He must show his faith by his works. To look to the goal is well, but to move toward it is better. Means are to be employed and activities put forth in order to make the ideal condition actual—at least so far as this process depends upon conscious effort. And this—as to what shall be done and how—is an ancient battlefield and a Babel of voices. The air resounds with contradictions, and the wise and the unwise speak their minds. But of this much the sick man may be sure—he needs, first of all, materials to rebuild his body. This is a fact curiously overlooked, and it accounts for a myriad of failures. We know that the architect needs not only a plan—an idea—but stone and brick and mortar. Yet we usually expect our own tissues to be repaired and all the great variety of bodily processes carried on, without adequate provision of material. Most people take enough food, a few people breathe enough air, but it is the rarely exceptional individual who drinks enough water. This is usually to be had in abundance—almost without money and without price—it is everywhere about—but we perish for the lack of it. The body must, in large proportion, be made of it, but we furnish it stintedly, because we are ignorant and careless, or because we are sure that "Mind" doesn't need anything so gross. Or we are afraid it is impure, and might poison us; so we generate in our systems the most deadly poisons for the need of it. The blood grows stagnant and thick, the liver demands something to make bile of, the stomach has to stop work for lack of gastric juice material, and the nervous system goes out on a sympathetic strike. We are fastidious about bathing, mayhap—we keep the

outside whited, but the inside is full of all uncleanliness, if not of dead men's bones. We take long journeys often, and we pay large sums to have our pulse examined and a tonic prescribed, when all we need is enough liquid to enable the body to get rid of its impurities and keep itself in working order. To the great majority of people it is yet a revelation that the average adult requires two full quarts of liquid per day. In the matter of breathing we are only a trifle less negligent than in our drinking. Everybody knows the need of the body for an abundance of fresh air, but practically we think little of it, and it is the exceptional house that is adequately ventilated. Likewise, it is the exceptional person—especially the exceptional woman—who breathes well. As to bathing and exercise, and host of other things, there is a wide latitude to meet individual needs and varying conditions; but whatever else the man in quest of sound health does or does not, his body absolutely requires nourishing food, and an abundance of air and water. No mental effort, no ambition, no theory, can take the place of the actual raw material needed. To stimulate within the sick man's mind the image and inspiration of health, and fail to supply him the material to build upon, is a farce—were it not so apt to be tragedy.

So much for the material means and activities for realizing the physical ideal. As to the mental means, the most fundamental has already been given—to hold the thought of health that is to be realized—to set up before the mind's eye the image of the self as freed from its limitation. That is to say, the second step in the process under discussion is much of the third; or, as already put, to look steadfastly upon the goal is to tend to bring it near. But to do this—and the other things necessary to be done—the mind must put its energies to work in the best way. And the best way is by systematic suggestion and auto-suggestion in some form or other.

In many cases of illness, it is true, the body seems to regain strength without especial mental effort; but these words are written for the sake of the one who would be well, no matter what the effort, and whether the body seem willing or not. And this one will find abundant reason to use his will power—not merely to move his muscles, but to control his feelings and direct his attention. If he would most speedily free himself from his limitations, he will wish to waste no particle of energy in fretfulness or petulance. Deadlier than any microbe that crawls, or flies, or swims, is grief. More debilitating than summer's heat, more

blasting than winter's cold, is a disappointment or a fear. More weakening than the hardest work is worry, apprehension, remorse, suspense. These feelings are only an incentive to some action, and are no more to be perpetually dwelt upon than bodily pain. When whatever has been done that can be done, the one who is achieving health in its fulness will resolutely blot them out of consciousness. If he is very much in earnest, he will be apt to determine that life is worth living, and that he will make it so for himself and other people; and he will set abloom within his soul the flowers of happiness and cheer and good-will, no matter to him how sterile that soil may seem. He will find himself desiring to cultivate not only a limitless energy, but to that end a limitless patience—with himself, and others, and the happenings of every day. Like Bunyan's immortal Pilgrim, he will fare on, his back upon the City of Destruction, his face toward the place of his desire. He may meet with Giant Despair and spend a time in Doubting Castle, he may wallow awhile in the Slough of Despond, and have many a stiff bout with Apollyon; but if he only keep on he will see the Shining Ones named Health and Strength come out to meet him. Is it worth the effort? Yes.

## TOLSTOY'S ANSWER TO THE RIDDLE OF LIFE.

### AN AMERICAN ADMIRER OF TOLSTOY.

ERNEST HOWARD CROSBY has been called Tolstoy's leading disciple in America, and truly no one has shown himself a more devoted friend to the venerable Russian reformer whose picture our author places before us in the following words:

"A strange figure—this peasant nobleman, this aristocrat, born into the ruling class of an autocracy, who condemns all government and caste, this veteran of two wars who proscribes all bloodshed, this keen sportsman turned vegetarian, this landlord who follows Henry George, this man of wealth who will have nothing to do with money, this famous novelist who thinks that he wasted his time in writing most of his novels, this rigid moralist, one of whose books at least, the "Kreutzer Sonata," was placed under the ban of the American Post Office. That same dramatic instinct which made him a great novelist, which impelled Sir Henry Irving to rank his two plays among the best of the past century, and which, as we have seen, has so often led him to find

lessons in the active world around him, this same instinct has made of this least theatrical and most self-forgetful of men the dramatic prefigurement in his own person of a reunited race, set free by love from the shackles of caste and violence. As it was with the prophets of old, so with him, there is a deeper significance in his life, in the tragedy of himself, than in the burden of his spoken message."

Mr. Crosby's enthusiasm for this prophet of peace and good-will on earth finds utterance in the following lines:

"Hail, Tolstoy, bold, archaic shape,
Rude pattern of the man to be,
From 'neath whose rugged traits escape
Hints of a manhood fair and free.

"I read a meaning in your face,
A message wafted from above,
Prophetic of an equal race
Fused into one of robust love.

"Like some quaint statue long concealed,
Deep buried in Mycenæ's mart,
Wherein we clearly see revealed
The promise of Hellenic art,

"So stand you; while aloof and proud,
The world that scribbles, prates, and frets
Seems but a simpering, futile crowd
Of Dresden china statuettes.

"Like John the Baptist, once more scan
The signs that mark the dawn of day.
Forerunner of the Perfect Man,
Make straight His path, prepare the way.

"The desert, too, is your abode,
Your garb and fare of little worth;
Thus ever has the Spirit showed
The coming reign of heaven on earth.

"Not in kings' houses may we greet
The prophets whom the world shall bless,
To lay my verses at your feet
I seek you in the wilderness."

And, indeed, Tolstoy is a remarkable man in spite of much that may be called one-sided and eccentric. Tolstoy, in his rugged originality and with his independence of thought, is and will remain forever a most unique personality. We will here let Tolstoy speak for himself, selecting from Mr. Crosby's books Tolstoy's solution of the problem of life, his view of the soul, and its destiny after death, which is Christian in spirit, explaining the argument of Tolstoy's belief in the doctrine of non-resistance, and at the same time closely resembles the Buddhist conception of Nirvâna.

### TOLSTOY'S PHILOSOPHY.

"We should begin our researches with that which we alone know with certitude, and this is the 'I' within us. Life is what I feel in myself, and this life science cannot define. Nay, it is my idea of life rather which determines what I am to consider as science, and I learn all outside of myself solely by the extension of my knowledge of my own mind and body. We know from within that man lives only for his own happiness, and his aspiration toward it and his pursuit of it constitute his life. At first he is conscious of the life in himself alone, and hence he imagines that the good which he seeks must be his own individual good. His own life seems the real life, while he regards the life of others as a mere phantom. He soon finds out that other men take the same view of the world, and that the life in which he shares is composed of a vast number of individuals, each bent on securing its own welfare, and consequently doing all it can to thwart and destroy the others. He sees that in such a struggle it is almost hopeless for him to contend, for all mankind is against him. If, on the other hand, he succeeds by chance in carrying out his plans for happiness, he does not even then enjoy the prize as he anticipated. The older he grows, the rarer become the pleasures; ennui, satiety, trouble and suffering go on increasing; and before him lie old age, infirmity and death. He will go down to the grave, but the world will continue to live.

"The real life, then, is the life outside him, and his own life, which originally appeared to him the one thing of importance, is after all a deception. The good of the individual is an imposture, and if it could be obtained it would cease at death. The life of man as an individuality seeking his own good, in the midst of an infinite host of similar individualities engaged in bringing one another to naught, and being themselves annihilated in the end, is an evil and an absurdity. It cannot be the true life.

"Our quandary arises from looking upon our animal life as the real life. Our real life begins with the waking of our consciousness, at the moment when we perceive that life lived for self cannot produce happiness. We feel that there must be some other good. We make an effort to find it, but failing, we fall back into our old ways. These are the first throes of the birth of the veritable human life. This new life only becomes manifest when the man once for all renounces the welfare of his animal individuality as his aim in life. By so doing he fulfills the law of reason, the law which we all are sensible of within us—the same universal law which governs the nutrition and reproduction of beast and plant.

"Our real life is our willing submission to this law, and not, as science would have us hold, the involuntary subjection of our bodies to the laws of organic existence. Self-renunciation is as natural to man as it is for birds to use their wings instead of their feet; it is not a meritorious or heroic act; it is simply the necessary condition precedent of genuine human life. This new human life exhibits itself in our animal existence just as animal life does in matter. Matter is the instrument of animal life, not an obstacle to it; and so our animal life is the instrument of our higher human life and should conform to its behests.

"Life, then, is the activity of the animal individuality working in submission to the law of reason. Reason shows man that happiness cannot be obtained by a selfish life, and leaves only one outlet open for him, and that is Love. Love is the only legitimate manifestation of life. It is an activity which has for its object the good of others. When it makes its appearance, the meaningless strife of the animal life ceases.

"Real love is not the preference of certain persons whose presence gives one pleasure. This, which is ordinarily called love, is only a wild stock on which true love may be grafted, and true love does not become possible until man has given up the pursuit of his own welfare. Then at last all the juices of his life come to nourish the noble graft, while the trunk of the old tree, the animal individuality, pours into it its entire vigor. Love is the preference which we accord to other beings over ourselves. It is not a burst of passion, obscuring the reason, but on the contrary no other state of the soul is so rational and luminous, so calm and joyous; it is the natural condition of children and the wise.

"Active love is attainable only for him who does not place his happiness in his individual life, and who also gives free play to his feeling of good-will toward others. His well-being depends upon

love as that of a plant on light. He does not ask what he should do, but he gives himself up to that love which is within his reach. He who loves in this way alone possesses life. Such self-renunciation lifts him from animal existence in time and space into the regions of life. The limitations of time and space are incompatible with the idea of real life. To attain to it man must trust himself to his wings.

"Man's body changes; his states of consciousness are successive and differ from each other; what then is the 'I'? Any child can answer when he says, 'I like this; I don't like that.' The 'I' is that which likes—which loves. It is the exclusive relationship of a man's being with the world, that relation which he brings with him from beyond time and space. It is said that in his extreme old age, St. John the Apostle had the habit of repeating continually the words, 'Brethren, love one another.' His animal life was nearly gone, absorbed in a new being for which the flesh was already too narrow. For the man who measures his life by the growth of his relation of love with the world, the disappearance at death of the limitations of time and space is only the mark of a higher degree of light.

"My brother, who is dead, acts upon me now more strongly than he did in life; he even penetrates my being and lifts me up toward him. How can I say that he is dead? Men who have renounced their individual happiness never doubt their immortality. Christ knew that He would continue to live after His death because He had already entered into the true life which cannot cease. He lived even then in the rays of that other centre of life toward which He was advancing, and He saw them reflected on those who stood around Him. And this every man who renounces his own good beholds; he passes in this life into a new relation with the world for which there is no death; on one side he sees the new light, on the other he witnesses its actions on his fellows after being refracted through himself; and this experience gives him an immovable faith in the stability, immortality, and eternal growth of life. Faith in immortality cannot be received from another; you cannot convince yourself of it by argument. To have this faith you must have immortality; you must have established with the world in the present life the new relation of life, which the world is no longer wide enough to contain."—"The Open Court," December, 1903.

## MEDICAL EXCERPT.

By T. P. Corbally, A.M., M.D.

The Circulation in the Secretion of Urine.—MM. Lamy and Mayer have made many experiments on the urinary circulation, and at a meeting of the Société de Biologie have given the following conclusions:

1. There is no invariable relation between the degree of the pressure and the activity of the secretion in the kidneys.

2. The general variation of pressure and that of the quantity of urine secreted do not take place necessarily in the same sense.

3. All the conditions being equal, the increase of the pressure renders the urinary secretion more active.

As to the rapidity with which the blood passes through the kidneys:

1. There is no constant relation between the rapidity of the circulation and activity of the secretion in the kidney.

2. The variations do not take place in the same sense.

3. All conditions being equal, the increase in the rapidity of the circulation favors the diuresis. This tends to establish the fact that the secretion is a very different thing from a filtration, and that the important rôle in the function of the kidneys belongs to the cells, which must not be considered as inert membranes.

These conclusions refer particularly to the mechanical conditions in the circulation in the urinary circulation ("Le Progrès Médical," December 5, 1903).

Radiographies of the Tubercular Ganglions.—M. Bouchard presented, in the name of M. Béclère, radiographic proofs taken on the living subject ("Le Progrès Médical," Dec. 12, 1903), that reproduce with an extraordinary exactness all the lymphatic and ganglionary systems of the neck, the axilla and the thoracic cavity.

Tuberculines.—M. Marmoreck considers that the tubercle bacillus produces two kinds of toxines: one diffusible, drawing effects from a distance, especially on the nervous system; the other adherent to the bacillary body, acting by contact on the adjoining tissues by causing a defensive reaction which results in the formation of the tubercle.

Given this multiplicity of tubercular toxines, the indication seems to be to strengthen the resisting power of the organism, rather than try to neutralize them by antitoxines. The tubercular bacilli are fully enveloped in the phagocytes, but generally these latter are incapable of digesting them. The problem, then, which is presented is to increase the bacteriolytic power by means of a vaccine matter obtained during the actual development of the same disease. The vaccinating substances are found to exist in the medium in which is found the bacillus of Koch, and even in this bacillus itself. The following is the means the author has employed for the preparation of the vaccine:

To 600 cc. of bouillon of veal he adds 400 cc. of hydrate of lime freshly prepared; after filtration, sterilization, implanting, this bouillon is put in the stove at 37° to 38° during two months to two and a half; the substance having become acid, is filtered on paper, then neutralized by means of lime water, filtered on wax, and evaporated in a vacuum cold until it has a syrupy consistence. The toxines thus obtained are designated by the name of *basitoxines* (T. B.).

For the other part the tubercle bacillus, thoroughly washed and dried in vacuum, are treated with the water-bath for two hours at about 70° with a solution of orthophosphoric at 1 per cent. (in the proportion of 300 cc. of the solution for 7 gr. of the bacilli dry), by agitating it frequently; after cooling it is filtered several times on paper; to each centimeter cube of the filtered substance corresponding with 0.002 gr. of the substance extracted from the bacillary bodies. The author designates these last under the name of *acidotoxines* (A. T.).

He used in his experiments on man and on the guinea-pig a combination of equal parts of A. T. and T. B. previously diluted. In the case of the guinea-pig the vaccination so far shows no definite result, but the animals so treated are still alive and unchanged. In man these tuberculines during more than two years have been employed in 90 cases with or without fever. Although two-thirds of these tuberculous cases have arrived at the second or at the third period, in 60 of them an amelioration of all the morbid symptoms has been distinctly manifested.—PHISALIX.

LE SERUM DE MARMORECK.—MM. Dieulafoy, Le Dentir, Hallopeau, report to the Académie de Médecine many different observations on patients treated with the new antitubercular serum ("Le Progrès Médical," Dec. 12, 1903). The results have been moder-

ate; they were even bad in seven cutaneous cases of tubercles treated by M. Hallopeau. M. Monod has been more successful in many cases of localized tubercles. All the patients were improved some; some may be considered cured. But in these cases the effect of general hygiene and of surgical interference, which have not been neglected, must be taken into consideration.

No accident, either local or general, has in any of the cases been observed.

WOUND OF THE LIVER AND THE RIGHT FEMORAL ARTERY.—M. Leguen presented to the Société de Chirurgie a patient on whom he operated immediately after the accident one evening for a wound in the liver caused by a ball from a revolver ("Le Progrès Médical," Dec. 5, 1903). The wound was vertical and deep, and M. Leguen could not do more then than tampon it. Some time afterward the patient, who was in the service of M. Blum, wished to know where the ball was located. On the application of the radiograph it was discovered that the projectile was located in the triangle of Scarpa.

M. Blum wished to extract it by means of a small incision, after giving a local anesthetic with cocaine. The ball was easily removed, but the moment the pressure caused by the ball was taken away, and the clots taken out, a dangerous hemorrhage followed which it was impossible to arrest, except by a ligature on the femoral artery. The artery had been wounded by the ball when the accident occurred.

SUPPURATING APPENDICITIS OPENING INTO THE BLADDER.—Dr. Enrique Fortuna, of Havana, reports ("Revista Medica Cubana," July, 1903) a complicated case of suppurating appendicitis with evacuation into the bladder (the urine which was shown to us was extremely fetid and mingled, and it contained a large quantity of pus) and syphilitic cirrhosis of the liver.

"We advised the patient to consent to be operated upon, which he did. On the following day an incision of about 7 centimetres was made into the middle of the depression observed in the iliac pit. We rapidly reached a perfectly defined cavity, which contained a little pus mixed with mucosities. We washed out the cavity with Hydrozone and plugged it with iodoform gauze. On the following day, when we dressed the wound, upon careful examination of the cavity, we did not find any connection with the bladder, but we could extract the appendix, which was affected by fæces.

"A complete cure was accomplished in a month, and during that time the liver decreased considerably in volume. Since the third day of the operation antisyphilitic treatment was followed.

"The communication between the cavity of the abscess and the bladder healed after 12 days of treatment."

COLLARGOLUM BY INTRAVENOUS INJECTION IN ERYSIPELAS.—Warren Coleman, M.D., Professor of Clinical Medicine, Cornell University, reports ("Medical Record," Nov. 21, 1903) the details of the successful use of collargolum in five cases of erysipelas. Three of them promptly recovered after single injections, one of them after two injections, and the last after three injections. Being convinced by an experience of some 20 cases of various diseases of its harmlessness, he recommends that the method be tried in appropriate cases. So impressed is he with the possibilities which the intravenous use of collargolum holds that he is actively continuing the work upon cases placed at his disposal by Professor Loomis.

THE TREATMENT OF NASAL CATARRH.—Mannon ("Cincinnati Lancet-Clinic") finds no danger whatever from the use of the nasal douche, provided ordinary care is taken and a proper solution is employed. The charge that post-nasal douching is prone to excite inflammation of the middle ear, he does not find sustained. All leading specialists employ this method of treatment in the posterior as well as the anterior nares with equally good results. The doctor has had chronic nasal catarrh of many months' duration yield to douching when heroically employed. Listerine to which a small quantity of bicarbonate of soda has been added is his main stand-by. If hemorrhage is a controlling feature he uses instead a saturated solution of tannic acid, to each ounce of which ten grains of carbolic acid has been added. When the tendency to bleed ceases he returns to the listerine solution. Treated in this way the most pronounced cases yield in three or four weeks and are not prolonged by complications or sequelæ.

REMITTENT FEVER OF INDIA CAUSED BY A NEW PIROPLASME.—MM. A. Laveran and F. Mesmil have recently described to the Academie des Sciences as a new piroplasme, under the name *Piroplasma Donovani,* a parasite found in the blood of the spleen of patients suffering with a special remittent unaffected by quinine ("Le Progrès Médical," Dec. 19, 1903). This affection seems to extend its influence over a great part of India, for it has been

described by M. Leishman near Calcutta, and by M. Donovan at Madras.

The parasite was first observed by M. Leishman, who made of it a trypanosome having undergone changes in the cadaver. M. Renauld Ross considers it as a new sporozoaire, for which he has formed the generic term Leishmania. The authors, relying on the new preparations that have been sent to them by M. Donovan, who has observed not less than 16 cases of the fever in question from the 17th of June to the 5th of November last, still maintain their former opinion, and see in this micro-organism the first piroplasme parasite in man.

This protozoaire, in the preparations obtained from the spleen and the liver, is found under the appearance of small pyroform bodies, oval or spherical, from 2.5m. to 4m. long, and 1.5m. wide, free or included in the blood globules and the leucocytes. They are reproduced most frequently by bi-partition and longitudinal division of the cell, or by manifold divisions. In this last case their volume increases, then their nodule divides twice, and even three times, and in this way they include four, and at times eight, kernels.

The parasitic blood vesicles increase in volume in proportion to the number of piroplasmes (from 1 to 7 or 8) that they contain; they change very rapidly, become pale and of bad color. The presence of these endoglobular forms justifies the supposition that the parasite ought at some time be found in the peripheral circulation, but M. Donovan has never found it there, and MM. Laveran and Mesmil have not found it in the preparations of blood that this practitioner has sent to them.

Attributing to this micro-organism the genera piroplasme results according to the authors from its numerous analogies with the *Piroplasma bigeminum,* the agent of the epizootic fever of Texas and prototype of the group so remarkable for its pear shape and endoglobular elements, and also from its habitual manner of reproduction by a longitudinal division in two equal parts.—Dr. PHISALIX.

UROTROPIN IN THE PROPHYLAXIS OF SCARLATINAL NEPHRITIS. —Dr. J. Widowitz, Gratz, Austria, reports ("Wiener Klinische Wochenschrift," Oct. 1, 1903) the beneficial action of urotropin in vesical catarrh, pyelitis and phosphaturia, and ascribes its benefit to the disinfectant action of the formalin separated from it in the urinary passages, by which he was induced to use urotropin in

scarlatina to prevent the advent of nephritis. For, he says, it is probably correctly assumed that nephritis in scarlatina is due to the as yet undetermined scarlatinal microbe or its toxines; and an efficient antibacterial agent applied to the site of the infection may inhibit the pathological changes that mark the renal affection.

During the past three years he used it in 102 cases. From three-quarters to seven and a half grains were given thrice daily for three consecutive days at the onset of the disease; and the same doses were given at the beginning of the third week, when nephritis most commonly occurs. Children from 1 to 15, and an adult of 21, were treated in this way. The remedy was always well borne. Nephritis did not occur in a single case, although it is the most common complication of scarlatina. Johannessen has seen it in as few as 16 per cent. and as many as 90 per cent. of the patients. It occurs especially in mild cases, which were the most frequent.

Two cases deserve especial mention. A girl of 11 sickened with a fairly mild attack. On the 15th day large quantities of albumin were present in the urine. Five grains urotropin t. i. d. Two days later the albumin permanently disappeared. Another girl of 11 had had paroxysmal hemoglobinuria for 8 years. When she fell sick with scarlatina hemoglobinuria at once appeared. Urotropin 5 gr. t. i. d. Urine free from blood coloring matter on the third day. On the 14th day temperature rose to 100.6° and hemoglobinuria reappeared. On the 18th day urotropin was again given; blood coloring matter disappearing 4 days later.

The absence of nephritis in his 102 cases, he says, may possibly have been accidental. But it certainly urges to further clinical trials.

## RECENT SANITARY PATENTS.

741625.—Strength Testing or Punching Machines; Robert J. Carson, New York, N. Y.

741679.—Means for Excluding Dampness from Vaults; Herman L. Kubbernuss, St. Louis, Mo.

741690.—Water Purifier; Oscar M. R. Moller, Copenhagen, Denmark.

741722.—Tooth Brush; Wm. B. Ryder and Chas. L. Reynolds, Redding, Cal.

741742.—Sterilizing Apparatus; Georg Van Eyck, Oeflingen, Germany.

741855.—Refrigerating and Purifying Apparatus; Carl W. Vollmann, Montreal, Canada.

741966.—Exercising Device; Chas. Hernsheim, New York, N. Y.

741988.—Holder for Toilet Paper; John J. Tierney, New York, N. Y.

742224.—Process of Treating Garbage; Ernest S. Peck, Newburg, Ohio.

742225.—Process of Treating Garbage; Ernest S. Peck, Newburg, Ohio.

742226.—Process of Treating Garbage; Ernest S. Peck, Newburg, Ohio.

742287.—Massage Instrument; Louis Casper, Chicago, Ill.

742393.—Exercising Device; Wm. H. Chellis and Frank W. McAnanny, Racine, Wis.

742534.—Massage Implement; Julius B. Wantz, Chicago, Ill.

742560.—Sterilizer; Robt. B. Barnstead, Ashmont, Mass.

742838.—Means for Fumigating; Lewis W. Cock, San Marcos, Tex.

742900.—Sanitary Delivery and Display Package; Wm. B. Page, Dixon, Ill.

742934.—Water Purifying Apparatus; Jas. Anderson, Brooklyn, N. Y.

742994.—Sanitary Trap; John W. McAuliffe, Providence, R. I.

743127.—Disinfecting Apparatus; Franklyn M. Wise, New York, N. Y.

743226.—Spittoon; Friedrich K. Beyer, Bielefeld, Germany, and Conrad W. W. T. List, Hanover, Germany.

743310.—Neck and Chest Protector; Stillman A. Moulton, Campbell, Cal.

743340.—Disinfecting Apparatus; Percy Simundt, Charlottenburg, near Berlin, Germany.

743353.—Device for Disinfecting Telephones; Nelson J. Tubbs, Louisville, Ky.

743528.—Apparatus for Flushing and Ventilating Urinals; Jos. Le Reandit L'Henreux, Windsor, Canada.

743562.—Device for Cooling or Warming the Human Body; Bernhard Röber, Dresden, Germany.

744171.—Method of Separating Oily or Similar Impurities from Water; Henry T. Davis and Ernest Perrett, Lewisham, England.

744193.—Apparatus for the Purification of Water; Frank S. Hammond, Malden, Mass.

# EDITOR'S TABLE.

SANITARIAN, FEBRUARY, 1904.

**All Communications, business and otherwise, all exchanges and all publications for review should be addressed to the Editor, Dr. A. N. Bell, 337 Clinton Street, Brooklyn, N. Y.**

CORRIGENDA:

THE INTERNATIONAL CONGRESS ON TUBERCULOSIS.

Dr. *S. A. Knopf*, of New York, not "Knapp" as the printer made us say in our January issue, who has such an antipathy to Mr. Clark Bell that he would sooner have no Congress with a view to concentrated action for the prevention of tuberculosis, than one with which Mr. Bell is identified. This opposition of Dr. Knopf is the more remarkable since, besides his having assumed oracular authority in behalf of the medical profession, through a half dozen or more medical journals, defining the qualifications of the personnel which he deems essential for such an organization, he has presented an urgent "Plea for Justice to the Consumptive" ("Medical Record," January 2) to an audience of *jurists* and physicians, embodying the need of just such co-operation of physicians and men of other professions and affairs as provided in the International Congress. He severely and deservedly berates the Governor and Legislature of New York for their opposition to the will of the medical profession in the choice of suitable sites for sanatoria. But anxious, as he always appears to be, to identify himself with every movement for the treatment and prevention of tuberculosis he hears of, he schemes and attempts to debase the forthcoming International Congress because Mr. Clark Bell has been a leading spirit in its organization.

Early in November last he wrote to Dr. E. J. Barrick, president of the Congress:

"I have learned that there is to be an American Congress on Tuberculosis, of which you are the president. I am anxious to be informed as to when and where the Congress is to be held, and who is the secretary, and what formalities have to be complied with in order to become a member?

"Thanking you in advance for your kindness, I am,

"Very sincerely yours, S. A. KNOPF."

"P.S.—If there is any printed matter (circulars, etc.) issued, will you kindly favor me with such?"

"(Dictated.)"

In reply, Dr. Barrick referred him to Mr. Clark Bell, Chairman of the Committee of Arrangements, who could tell him all about it. That was enough. From the time he received the reply to this, he seems to have worked unceasingly to debase and supplant it. He has been successful in so far as to have been chiefly instrumental in calling a review congress, at the "Tuberculosis Exposition" to be held in Baltimore, beginning January 25, to know what he and his followers can do about it.

We are gratified to know that, notwithstanding Dr. Knopf's energetic opposition—perhaps, in part, because of it—the prospect of a great congress, comprehending persons of the highest distinction, interested in measures for the prevention of tuberculosis, is eminently encouraging. The "*Congress Internationale* de la Tuberculosis," which was announced to be held in Paris September 26th to October 1st, 1904, under the presidency of Professor Brouardel, one of the Honorary Members of the Medico-Legal Society, and of whom Prof. Dr. M. Letulle, of the Faculty of Medicine, 7 Rue de Magdebourg, is Secretary, out of respect to the American Congress, has decided to postpone its session to the year 1905. Prof. Brouardel had been advised of the action of the United States Government respecting the holding of the American Congress at the St. Louis Exposition, at dates, which, while although not identical, were too near each other to enable the Frenchmen to attend the St. Louis Congress or the Americans to attend the Paris Congress.

The adjournment will accommodate both bodies and enable the International Congress at St. Louis to receive the representatives of the Paris Congress who have been invited to be present.

There has been for many years a great desire to meet Prof. Brouardel on this side of the Atlantic, and it is reasonably hoped that he will attend the International Congress at St. Louis, on October 3d, 4th and 5th, 1904.

### THE CARNEGIE INSTITUTION.

The Carnegie Institution at Washington is undoubtedly the chief benediction of Mr. Andrew Carnegie. His gift of $10,000,000 constitutes an endowment of research. It is not an institution for teaching, but an institution for inquiry, for exploration and discovery in the arts, the sciences, and in those branches of investigation which add to the stock of human knowledge. Funds are liberally provided from the sums annually devoted to such purposes for research in any field or upon any subject as to which

there is a reasonable promise of human enlightenment, and in respect to which enlightenment would be useful or desirable. There is nowhere else in the world so important a source of scientific inquiry.

The Institution has resources amounting to $10,101,500. During the past year it has defrayed the expenses of ethnological investigations among the Pawnee Indians, of inquiries into the evidence of the antiquity of man in America, into the geological conditions in the trans-Caspian region and in Eastern China, into the problem of resistance and propulsion in navigation, into the physiology of nutrition, and among the subjects of study have been marine biology and embryology, which was studied in the experimental station at Naples; besides many subjects in the domain of astronomy and chemistry. Archæological investigations have been carried on in Greece and Asia Minor, and an investigation has been begun with a view to determining the most favorable point in the southern hemisphere for the establishment of an astronomical observatory. Studies of the sun and the moon are proposed, and historical research is mentioned among the objects encouraged by the Institution.

The expenses of administration are relatively small, leaving its great revenues applicable to the main purpose of the foundation. For the present year there is appropriated $60,000 for administration, $130,000 for "larger projects," $300,000 for minor projects of research, and $43,000 for special grants, besides $100,000 for a reserve fund, presumably as a provision for unforeseen objects which may from time to time be presented as worthy.

### AN UNSINKABLE SHIP.

Captain Diedrich Hogemann and First Engineer Schriever, of the North German Lloyd steamer Kaiser Wilhelm II, gave a demonstration recently while the ship was in this port of the new system by which the gigantic liner is made practically "unsinkable." It takes only twenty seconds to put in motion the machinery which, acting with absolute accuracy, makes the vessel invulnerable to the dangers of collision.

The double bottom of the ship is divided into twenty-six watertight compartments, and the hull has sixteen transverse bulkheads reaching to the deck and one longitudinal bulkhead separating the engine rooms. It is for the operation of the doors of these bulkheads below the water line that the device has been invented, hydraulic pressure being the motive power used.

The first movement on the bridge not alone releases the controlling device, but sounds warning gongs in all of the machine and bunker rooms, so that those employed there may spring at once to their posts and be prepared for any emergency, or for escape to the deck if it becomes necessary. Almost immediately the great half-ton steel doors, with absolute precision, descend, cleaving their way through anything that may be in the way. In the tests four and five feet of coal have been cut through by the sharp edges of the doors. In this way the ship is divided into numerous sections, all of them water-tight, and the designing of the boat has been so done that should two adjoining bulkheads become flooded, the vessel would still float.

Besides the automatic device, there are means of closing each bulkhead door from the deck, and an electrical device causes a red light to glow in the chart room, so that the captain may know instantly just what bulkheads are closed and which are opened.

The pumps in the engine room, as well as the pressure tanks and the supply tanks, are so placed as to be above the inflow of water from any injury to the hull. Altogether, the Kaiser Wilhelm II, which is regarded as the costliest and largest passenger steamer in the world, having a capacity for the transportation of two thousand five hundred persons, is about as "unsinkable" as a boat can well be.—"Mail and Express."

### TENEMENT-HOUSE ENLARGEMENTS IN BOSTON.

A serious problem ("American Architect") confronts the people of Boston, in the apparent necessity for remodeling the portions of the building laws relating to the construction of tenement-houses. Under the present law, every new tenement-house more than three stories in height must be of fireproof construction throughout. This regulation has, naturally, checked the building of tenements in the older part of the city, where land is too valuable to be covered with three-story structures, and not valuable enough to warrant the erection of four or five story fireproof buildings, and has driven tenement-house construction to the newer portions of the city, where immense tracts, which were well on the way toward becoming beautiful and desirable residential quarters, have been irretrievably ruined by the invasion of miserable three-story flats, of the cheapest possible construction. Many attempts have been made to secure the modification of the law, so as to permit the erection of non-fireproof tenements to a height of four stories, which, except in the most crowded quarters, is the limit to which

it is prudent to carry such houses without putting in a passenger elevator; but the insurance companies have steadily resisted such change, and their influence is too strong to be overcome. Now, a new problem has presented itself, in the question of utilizing the houses, built fifty or sixty years ago, at the South and West Ends. These houses were once the dwellings of the rich, but the change of fashion, or, rather, the invasion of the territory by the foreign element which is so large in Boston, has driven out the original inhabitants, and the houses are rented to such tenants as offer themselves. Many of the houses are large, and could be altered into excellent tenements, but the law, which forbids any such alteration of a four-story building, unless it is made fireproof throughout, stands in the way of this, and, in consequence, most of the houses are utilized for lodgings, to the disadvantage of the owner, who could get a better rent for them as tenements, and not much to the advantage of the lodgers. The new Tenement-house Commission of Boston intends, it is said, to take up this matter, not in the interest of the landlords, but in that of poor families, who are seriously inconvenienced by having to go two or three miles away from their work to find cheap tenements, and could, except for the law, be conveniently, cheaply and safely accommodated in the heart of the city.

STREET DIRT IN EDINBURGH AND LONDON.

In Edinburgh ("The Surveyor," November 13,) very primitive methods for the collection of house refuse exist. The housewives, instead of placing the day's collection in closed barrels, to wait the advent of the dustcart, empty it pell-mell on the streets, with dire results to pedestrians when the wind is high. The corporation is endeavoring to introduce a more up-to-date method, and the other day Sheriff Rutherfurd reserved his judgment as to the confirmation of the proposed regulations. Over 1,000 rate-payers have petitioned in favor of the old order of things remaining.

Referring to the above statement, the following letter addressed to the editor of "The Daily Mail" (London) is one more illustration of the advantages of seeing ourselves as others see us:

"The methods of dust-collecting in Edinburgh, compared with those of London, are exemplary.

"Every household is obliged to have its refuse placed in a bucket outside the door before 6.30 a. m., and it is then collected by carts directly afterward. Sheriff Rutherfurd, in the case referred to in your issue of November 5th, said he did not know any town which

had a more lavish system in this respect. Sir Henry Littlejohn, the Medical Officer of Health in Edinburgh, has been for years engaged in perfecting satisfactory hygienic arrangements in the matter.

"In London I have stood on a doorstep in Carleton House terrace at 2 p. m., going to lunch, and had my lungs filled with dust and refuse blown from carts into which receptacles were being emptied. It is only in the main thoroughfares that daily dust-collecting before 10 a. m. is compulsory; in by-streets—and Carlton House-terrace is a 'by-street'—once a week is considered sufficient for removal, and that at any hour agreeable to the dustman, while bribes to effect even this satisfactorily are officially winked at."

THE SANITATION OF INDIA.

An elaborate report on the sanitation of India in 1901 has been issued. The population amounted to 293,000,000, showing an increase of 1.3 per cent. on 1891, but in several districts there was a considerable decrease. A marked relation was found between decreased population and diminished rainfall. The decennium included two famine years and cholera and plague were exceptionally prevalent. The decennial birth rates and death rates showed great variations; the highest provincial birth rate was 50.5, the lowest 14.67; the highest death rate was 119.9, the lowest 15.9. Cholera caused 4,500,000 deaths during the decennium. In 1901 the birth rate for the whole of India was 34.7, against 36.6 in 1900. The fever mortality was low, being 18.7, against 22.8 in 1900. The cholera death rate was low, 1.20, against 3.70 in 1900. The smallpox death rate was 0.40. It is estimated that about 33 per cent. of the children born are vaccinated. There was a large increase of plague mortality, the deaths amounting to 283,988, against 92,807 in 1900.—London Letter "Journal American Medical Association," Nov. 7, 1903.

NEW VOCATION FOR WOMEN.—The German press reports that a new vocation has been found for women on account of the use of Roentgen rays (X-rays) in the hospitals. Courses of lectures for the instruction of X-ray nurses will soon be commenced at Berlin. These women will only serve as nurses of patients treated by X-rays and as assistants at the use of them, which service is of a very delicate nature and requiring great care.—Richard Guenther, Consul-General, Frankfort, Germany, Sept. 11, 1903.

DANGER IN CELLULOID DOLL HEADS.—A Leipzig trade paper, in reporting on the recent fair held in that city, speaks favorably

of a new line of doll heads, made of tin and covered with celluloid. The opinion is expressed in the paper quoted that this novelty is a desirable improvement, as many lines of doll heads now in the market are composed of celluloid and are of great danger to children, on account of the liability to explosion to which celluloid is subject. The paper says the use of celluloid in the manufacture of toys is making steady progress.—Simon W. Hanauer, Deputy Consul-General, Frankfort, Germany, Sept. 10, 1903.

PLAGUE PREVENTION BY VACCINATION.—As the plague has again made its appearance at European ports, interest in remedies for and preventatives of the scourge is naturally very keen. Preventive inoculation, or vaccination, is considered of first importance. The "Medical Record" draws a comparison between the present situation at Hong Kong and Manila with reference to the value of preventive inoculation. In both cities the plague exists, and at both many intelligent efforts have been made to suppress it, but not with the same results. At Manila the plague has subsided very materially and will probably soon disappear, but it seems that it cannot be suppressed at Hong Kong. The reason for this can only be found in the fact that Manila preventive vaccination has been compulsory and on a large scale, including the 60,000 Chinese residents. It has been proven that the vaccination in use there, if repeated in intervals of ten days, is as certainly effective as vaccination against smallpox. —Richard Guenther, Consul-General, Frankfort, Germany, Sept. 18, 1903.

SALICYLIC ACID HARMFUL.

Washington, Jan. 3.—The food test at the Department of Agriculture, which has been going on for several months past, to test the effect of salicylic acid on human health, has brought out some queer results. The general fact is established that salicylic acid seriously injures health. One man, however, has reason to rejoice in the salicylic acid treatment. It has cured his rheumatism.

The experiments have been abandoned to save the subjects, but will be resumed when the men have recovered somewhat from the effects of the past two months' diet on prepared foods into which salicylic acid enters as a preservative.

Dr. Wylie says that he expected this result. This experiment has turned out just as did that with foods preserved with borax. That made the men all sick.

THE VIRGINIA HOT SPRINGS.—Invalids who resort hither are to be congratulated on the acquisition of Dr. Guy Hinsdale, of

Philadelphia, as medical advisor. The virtues of the waters are well known. The climate is exhilarating and well suited to convalescents from almost every disease. But an accomplished medical advisor is none the less essential to this, as to all such health resorts.

## MORTALITY AND MORBIDITY REPORTS AND REVIEWS.

STATE OF NEW YORK.—Monthly Bulletin Department of Health for November, 1903, 7,614,281: Total number of deaths, 10,009; annual death rate, 16.0; deaths under 5 years, 2,157; percentage of deaths under 5 years to total deaths, 21.7; deaths at 70 years and over, 1,714; deaths from zymotic diseases per 1,000 deaths from all causes, 100; from cerebrospinal meningitis, 23; typhoid fever, 165; malarial diseases, 9; smallpox, 3; scarlet fever, 61; measles, 48; erysipelas, 17; whooping-cough, 37; croup and diphtheria, 323; diarrheal diseases, 288; acute respiratory diseases, 1,573; consumption, 1,076; puerperal diseases, 91; diseases of the digestive system (not acute diarrhea), 566; diseases of the urinary system, 864; diseases of the circulatory system, 1,124; diseases of the nervous system, 1,056; cancer, 415; accidents and violence, 672; old age, 381; not classified, 1,274.

*Smallpox* is increasingly prevalent. By weekly bulletin issued by the State Department of Health, January 16, it had been reported during the previous week in the following places; Villages of Salamanca and West Salamanca, Cattaraugus County; city of Plattsburgh, Clinton County; village of Middleport and town of Cambria, Niagara County; and town of Massena, St. Lawrence County.

New York City, 3,732,903. Total number of deaths, 5,368; annual death rate, 17.15: Borough of Manhattan, 1,917,676—Deaths, 2,883; death rate, 18.3; Borough of the Bronx, 268,341, deaths 365; 16.4; Borough of Brooklyn, 1,219,597, deaths 1,790; 16.3; Borough of Queens, 182,681, deaths 229; 15.0; Borough of Richmond, 72,608, deaths 101; 17.0. The estimated total deaths from all causes in the greater city for the year 1903, as estimated by Dr. Guilfoy, Registrar of Records, was about 67,000. The death rate for the year 1902, the lowest recorded up to that time, was 18.75. The union of all the boroughs into the greater city tended to lower the average of the death rate, because the rate is

always slightly higher in Manhattan and the Bronx than it is in the outlying boroughs.

Though it cannot be assumed that the lowering of the death rate of the city within the two years past was wholly due to the efficiency of the Board of Health, considering the new measures practiced with regard to the schools and the more rigid enforcement of the anti-spitting law, there can be no question that the reduction was chiefly due to the efficiency of the service, however much it may have been favored by the no less efficient service of the Street Cleaning Department and the unusually cool summers.

THE NEW HEALTH COMMISSIONER.

Dr. THOMAS DARLINGTON is an eminently worthy appointee by Mayor McClellan as successor to Dr. Lederle. Dr. Darlington was born in Brooklyn forty-five years ago. Graduated at the College of Physicians and Surgeons (Columbia University), 1880. But before he took up the study of medicine, took a special three years' scientific and engineering course at the University of the City of New York. He practised medicine at Newark, N. J., 1880-82; subsequently at Kingsbridge, New York City, until 1888; at Bisbee, Arizona Territory, until 1891, when he returned to Kingsbridge, where he has practised ever since.

He was district physician of the Seventh District, Newark, 1882; visiting assistant at St. Michael's Hospital, Newark, 1880-82; surgeon to the New Croton Aqueduct Corporation, New York, 1885-88; to the Harlem Canal Improvement Works, 1888; surgeon

lessons in the active world around him, this same instinct has made of this least theatrical and most self-forgetful of men the dramatic prefigurement in his own person of a reunited race, set free by love from the shackles of caste and violence. As it was with the prophets of old, so with him, there is a deeper significance in his life, in the tragedy of himself, than in the burden of his spoken message."

Mr. Crosby's enthusiasm for this prophet of peace and good-will on earth finds utterance in the following lines:

"Hail, Tolstoy, bold, archaic shape,
Rude pattern of the man to be,
From 'neath whose rugged traits escape
Hints of a manhood fair and free.

"I read a meaning in your face,
A message wafted from above,
Prophetic of an equal race
Fused into one of robust love.

"Like some quaint statue long concealed,
Deep buried in Mycenæ's mart,
Wherein we clearly see revealed
The promise of Hellenic art,

"So stand you; while aloof and proud,
The world that scribbles, prates, and frets
Seems but a simpering, futile crowd
Of Dresden china statuettes.

"Like John the Baptist, once more scan
The signs that mark the dawn of day.
Forerunner of the Perfect Man,
Make straight His path, prepare the way.

"The desert, too, is your abode,
Your garb and fare of little worth;
Thus ever has the Spirit showed
The coming reign of heaven on earth.

"Not in kings' houses may we greet
The prophets whom the world shall bless,
To lay my verses at your feet
I seek you in the wilderness."

And, indeed, Tolstoy is a remarkable man in spite of much that may be called one-sided and eccentric. Tolstoy, in his rugged originality and with his independence of thought, is and will remain forever a most unique personality. We will here let Tolstoy speak for himself, selecting from Mr. Crosby's books Tolstoy's solution of the problem of life, his view of the soul, and its destiny after death, which is Christian in spirit, explaining the argument of Tolstoy's belief in the doctrine of non-resistance, and at the same time closely resembles the Buddhist conception of Nirvâna.

TOLSTOY'S PHILOSOPHY.

"We should begin our researches with that which we alone know with certitude, and this is the 'I' within us. Life is what I feel in myself, and this life science cannot define. Nay, it is my idea of life rather which determines what I am to consider as science, and I learn all outside of myself solely by the extension of my knowledge of my own mind and body. We know from within that man lives only for his own happiness, and his aspiration toward it and his pursuit of it constitute his life. At first he is conscious of the life in himself alone, and hence he imagines that the good which he seeks must be his own individual good. His own life seems the real life, while he regards the life of others as a mere phantom. He soon finds out that other men take the same view of the world, and that the life in which he shares is composed of a vast number of individuals, each bent on securing its own welfare, and consequently doing all it can to thwart and destroy the others. He sees that in such a struggle it is almost hopeless for him to contend, for all mankind is against him. If, on the other hand, he succeeds by chance in carrying out his plans for happiness, he does not even then enjoy the prize as he anticipated. The older he grows, the rarer become the pleasures; ennui, satiety, trouble and suffering go on increasing; and before him lie old age, infirmity and death. He will go down to the grave, but the world will continue to live.

"The real life, then, is the life outside him, and his own life, which originally appeared to him the one thing of importance, is after all a deception. The good of the individual is an imposture, and if it could be obtained it would cease at death. The life of man as an individuality seeking his own good, in the midst of an infinite host of similar individualities engaged in bringing one another to naught, and being themselves annihilated in the end, is an evil and an absurdity. It cannot be the true life.

In reply, Dr. Barrick referred him to Mr. Clark Bell, Chairman of the Committee of Arrangements, who could tell him all about it. That was enough. From the time he received the reply to this, he seems to have worked unceasingly to debase and supplant it. He has been successful in so far as to have been chiefly instrumental in calling a review congress, at the "Tuberculosis Exposition" to be held in Baltimore, beginning January 25, to know what he and his followers can do about it.

We are gratified to know that, notwithstanding Dr. Knopf's energetic opposition—perhaps, in part, because of it—the prospect of a great congress, comprehending persons of the highest distinction, interested in measures for the prevention of tuberculosis, is eminently encouraging. The "*Congress Internationale* de la Tuberculosis," which was announced to be held in Paris September 26th to October 1st, 1904, under the presidency of Professor Brouardel, one of the Honorary Members of the Medico-Legal Society, and of whom Prof. Dr. M. Letulle, of the Faculty of Medicine, 7 Rue de Magdebourg, is Secretary, out of respect to the American Congress, has decided to postpone its session to the year 1905. Prof. Brouardel had been advised of the action of the United States Government respecting the holding of the American Congress at the St. Louis Exposition, at dates, which, while although not identical, were too near each other to enable the Frenchmen to attend the St. Louis Congress or the Americans to attend the Paris Congress.

The adjournment will accommodate both bodies and enable the International Congress at St. Louis to receive the representatives of the Paris Congress who have been invited to be present.

There has been for many years a great desire to meet Prof. Brouardel on this side of the Atlantic, and it is reasonably hoped that he will attend the International Congress at St. Louis, on October 3d, 4th and 5th, 1904.

### THE CARNEGIE INSTITUTION.

The Carnegie Institution at Washington is undoubtedly the chief benediction of Mr. Andrew Carnegie. His gift of $10,000,000 constitutes an endowment of research. It is not an institution for teaching, but an institution for inquiry, for exploration and discovery in the arts, the sciences, and in those branches of investigation which add to the stock of human knowledge. Funds are liberally provided from the sums annually devoted to such purposes for research in any field or upon any subject as to which

there is a reasonable promise of human enlightenment, and in respect to which enlightenment would be useful or desirable. There is nowhere else in the world so important a source of scientific inquiry.

The Institution has resources amounting to $10,101,500. During the past year it has defrayed the expenses of ethnological investigations among the Pawnee Indians, of inquiries into the evidence of the antiquity of man in America, into the geological conditions in the trans-Caspian region and in Eastern China, into the problem of resistance and propulsion in navigation, into the physiology of nutrition, and among the subjects of study have been marine biology and embryology, which was studied in the experimental station at Naples; besides many subjects in the domain of astronomy and chemistry. Archæological investigations have been carried on in Greece and Asia Minor, and an investigation has been begun with a view to determining the most favorable point in the southern hemisphere for the establishment of an astronomical observatory. Studies of the sun and the moon are proposed, and historical research is mentioned among the objects encouraged by the Institution.

The expenses of administration are relatively small, leaving its great revenues applicable to the main purpose of the foundation. For the present year there is appropriated $60,000 for administration, $130,000 for "larger projects," $300,000 for minor projects of research, and $43,000 for special grants, besides $100,000 for a reserve fund, presumably as a provision for unforeseen objects which may from time to time be presented as worthy.

### AN UNSINKABLE SHIP.

Captain Diedrich Hogemann and First Engineer Schriever, of the North German Lloyd steamer Kaiser Wilhelm II, gave a demonstration recently while the ship was in this port of the new system by which the gigantic liner is made practically "unsinkable." It takes only twenty seconds to put in motion the machinery which, acting with absolute accuracy, makes the vessel invulnerable to the dangers of collision.

The double bottom of the ship is divided into twenty-six watertight compartments, and the hull has sixteen transverse bulkheads reaching to the deck and one longitudinal bulkhead separating the engine rooms. It is for the operation of the doors of these bulkheads below the water line that the device has been invented, hydraulic pressure being the motive power used.

The first movement on the bridge not alone releases the controlling device, but sounds warning gongs in all of the machine and bunker rooms, so that those employed there may spring at once to their posts and be prepared for any emergency, or for escape to the deck if it becomes necessary. Almost immediately the great half-ton steel doors, with absolute precision, descend, cleaving their way through anything that may be in the way. In the tests four and five feet of coal have been cut through by the sharp edges of the doors. In this way the ship is divided into numerous sections, all of them water-tight, and the designing of the boat has been so done that should two adjoining bulkheads become flooded, the vessel would still float.

Besides the automatic device, there are means of closing each bulkhead door from the deck, and an electrical device causes a red light to glow in the chart room, so that the captain may know instantly just what bulkheads are closed and which are opened.

The pumps in the engine room, as well as the pressure tanks and the supply tanks, are so placed as to be above the inflow of water from any injury to the hull. Altogether, the Kaiser Wilhelm II, which is regarded as the costliest and largest passenger steamer in the world, having a capacity for the transportation of two thousand five hundred persons, is about as "unsinkable" as a boat can well be.—"Mail and Express."

### TENEMENT-HOUSE ENLARGEMENTS IN BOSTON.

A serious problem ("American Architect") confronts the people of Boston, in the apparent necessity for remodeling the portions of the building laws relating to the construction of tenement-houses. Under the present law, every new tenement-house more than three stories in height must be of fireproof construction throughout. This regulation has, naturally, checked the building of tenements in the older part of the city, where land is too valuable to be covered with three-story structures, and not valuable enough to warrant the erection of four or five story fireproof buildings, and has driven tenement-house construction to the newer portions of the city, where immense tracts, which were well on the way toward becoming beautiful and desirable residential quarters, have been irretrievably ruined by the invasion of miserable three-story flats, of the cheapest possible construction. Many attempts have been made to secure the modification of the law, so as to permit the erection of non-fireproof tenements to a height of four stories, which, except in the most crowded quarters, is the limit to which

it is prudent to carry such houses without putting in a passenger elevator; but the insurance companies have steadily resisted such change, and their influence is too strong to be overcome. Now, a new problem has presented itself, in the question of utilizing the houses, built fifty or sixty years ago, at the South and West Ends. These houses were once the dwellings of the rich, but the change of fashion, or, rather, the invasion of the territory by the foreign element which is so large in Boston, has driven out the original inhabitants, and the houses are rented to such tenants as offer themselves. Many of the houses are large, and could be altered into excellent tenements, but the law, which forbids any such alteration of a four-story building, unless it is made fireproof throughout, stands in the way of this, and, in consequence, most of the houses are utilized for lodgings, to the disadvantage of the owner, who could get a better rent for them as tenements, and not much to the advantage of the lodgers. The new Tenement-house Commission of Boston intends, it is said, to take up this matter, not in the interest of the landlords, but in that of poor families, who are seriously inconvenienced by having to go two or three miles away from their work to find cheap tenements, and could, except for the law, be conveniently, cheaply and safely accommodated in the heart of the city.

### STREET DIRT IN EDINBURGH AND LONDON.

In Edinburgh ("The Surveyor," November 13,) very primitive methods for the collection of house refuse exist. The housewives, instead of placing the day's collection in closed barrels, to wait the advent of the dustcart, empty it pell-mell on the streets, with dire results to pedestrians when the wind is high. The corporation is endeavoring to introduce a more up-to-date method, and the other day Sheriff Rutherfurd reserved his judgment as to the confirmation of the proposed regulations. Over 1,000 rate-payers have petitioned in favor of the old order of things remaining.

Referring to the above statement, the following letter addressed to the editor of "The Daily Mail" (London) is one more illustration of the advantages of seeing ourselves as others see us:

"The methods of dust-collecting in Edinburgh, compared with those of London, are exemplary.

"Every household is obliged to have its refuse placed in a bucket outside the door before 6.30 a. m., and it is then collected by carts directly afterward. Sheriff Rutherfurd, in the case referred to in your issue of November 5th, said he did not know any town which

had a more lavish system in this respect. Sir Henry Littlejohn, the Medical Officer of Health in Edinburgh, has been for years engaged in perfecting satisfactory hygienic arrangements in the matter.

"In London I have stood on a doorstep in Carleton House terrace at 2 p. m., going to lunch, and had my lungs filled with dust and refuse blown from carts into which receptacles were being emptied. It is only in the main thoroughfares that daily dust-collecting before 10 a. m. is compulsory; in by-streets—and Carlton House-terrace is a 'by-street'—once a week is considered sufficient for removal, and that at any hour agreeable to the dustman, while bribes to effect even this satisfactorily are officially winked at."

THE SANITATION OF INDIA.

An elaborate report on the sanitation of India in 1901 has been issued. The population amounted to 293,000,000, showing an increase of 1.3 per cent. on 1891, but in several districts there was a considerable decrease. A marked relation was found between decreased population and diminished rainfall. The decennium included two famine years and cholera and plague were exceptionally prevalent. The decennial birth rates and death rates showed great variations; the highest provincial birth rate was 50.5, the lowest 14.67; the highest death rate was 119.9, the lowest 15.9. Cholera caused 4,500,000 deaths during the decennium. In 1901 the birth rate for the whole of India was 34.7, against 36.6 in 1900. The fever mortality was low, being 18.7, against 22.8 in 1900. The cholera death rate was low, 1.20, against 3.70 in 1900. The smallpox death rate was 0.40. It is estimated that about 33 per cent. of the children born are vaccinated. There was a large increase of plague mortality, the deaths amounting to 283,988, against 92,807 in 1900.—London Letter "Journal American Medical Association," Nov. 7, 1903.

NEW VOCATION FOR WOMEN.—The German press reports that a new vocation has been found for women on account of the use of Roentgen rays (X-rays) in the hospitals. Courses of lectures for the instruction of X-ray nurses will soon be commenced at Berlin. These women will only serve as nurses of patients treated by X-rays and as assistants at the use of them, which service is of a very delicate nature and requiring great care.—Richard Guenther, Consul-General, Frankfort, Germany, Sept. 11, 1903.

DANGER IN CELLULOID DOLL HEADS.—A Leipzig trade paper, in reporting on the recent fair held in that city, speaks favorably

of a new line of doll heads, made of tin and covered with celluloid. The opinion is expressed in the paper quoted that this novelty is a desirable improvement, as many lines of doll heads now in the market are composed of celluloid and are of great danger to children, on account of the liability to explosion to which celluloid is subject. The paper says the use of celluloid in the manufacture of toys is making steady progress.—Simon W. Hanauer, Deputy Consul-General, Frankfort, Germany, Sept. 10, 1903.

PLAGUE PREVENTION BY VACCINATION.—As the plague has again made its appearance at European ports, interest in remedies for and preventatives of the scourge is naturally very keen. Preventive inoculation, or vaccination, is considered of first importance. The "Medical Record" draws a comparison between the present situation at Hong Kong and Manila with reference to the value of preventive inoculation. In both cities the plague exists, and at both many intelligent efforts have been made to suppress it, but not with the same results. At Manila the plague has subsided very materially and will probably soon disappear, but it seems that it cannot be suppressed at Hong Kong. The reason for this can only be found in the fact that Manila preventive vaccination has been compulsory and on a large scale, including the 60,000 Chinese residents. It has been proven that the vaccination in use there, if repeated in intervals of ten days, is as certainly effective as vaccination against smallpox. —Richard Guenther, Consul-General, Frankfort, Germany, Sept. 18, 1903.

SALICYLIC ACID HARMFUL.

Washington, Jan. 3.—The food test at the Department of Agriculture, which has been going on for several months past, to test the effect of salicylic acid on human health, has brought out some queer results. The general fact is established that salicylic acid seriously injures health. One man, however, has reason to rejoice in the salicylic acid treatment. It has cured his rheumatism.

The experiments have been abandoned to save the subjects, but will be resumed when the men have recovered somewhat from the effects of the past two months' diet on prepared foods into which salicylic acid enters as a preservative.

Dr. Wylie says that he expected this result. This experiment has turned out just as did that with foods preserved with borax. That made the men all sick.

THE VIRGINIA HOT SPRINGS.—Invalids who resort hither are to be congratulated on the acquisition of Dr. Guy Hinsdale, of

Philadelphia, as medical advisor. The virtues of the waters are well known. The climate is exhilarating and well suited to convalescents from almost every disease. But an accomplished medical advisor is none the less essential to this, as to all such health resorts.

## MORTALITY AND MORBIDITY REPORTS AND REVIEWS.

STATE OF NEW YORK.—Monthly Bulletin Department of Health for November, 1903, 7,614,281: Total number of deaths, 10,009; annual death rate, 16.0; deaths under 5 years, 2,157; percentage of deaths under 5 years to total deaths, 21.7; deaths at 70 years and over, 1,714; deaths from zymotic diseases per 1,000 deaths from all causes, 100; from cerebrospinal meningitis, 23; typhoid fever, 165; malarial diseases, 9; smallpox, 3; scarlet fever, 61; measles, 48; erysipelas, 17; whooping-cough, 37; croup and diphtheria, 323; diarrheal diseases, 288; acute respiratory diseases, 1,573; consumption, 1,076; puerperal diseases, 91; diseases of the digestive system (not acute diarrhea), 566; diseases of the urinary system, 864; diseases of the circulatory system, 1,124; diseases of the nervous system, 1,056; cancer, 415; accidents and violence, 672; old age, 381; not classified, 1,274.

*Smallpox* is increasingly prevalent. By weekly bulletin issued by the State Department of Health, January 16, it had been reported during the previous week in the following places; Villages of Salamanca and West Salamanca, Cattaraugus County; city of Plattsburgh, Clinton County; village of Middleport and town of Cambria, Niagara County; and town of Massena, St. Lawrence County.

New York City, 3,732,903. Total number of deaths, 5,368; annual death rate, 17.15: Borough of Manhattan, 1,917,676—Deaths, 2,883; death rate, 18.3; Borough of the Bronx, 268,341, deaths 365; 16.4; Borough of Brooklyn, 1,219,597, deaths 1,790; 16.3; Borough of Queens, 182,681, deaths 229; 15.0; Borough of Richmond, 72,608, deaths 101; 17.0. The estimated total deaths from all causes in the greater city for the year 1903, as estimated by Dr. Guilfoy, Registrar of Records, was about 67,000. The death rate for the year 1902, the lowest recorded up to that time, was 18.75. The union of all the boroughs into the greater city tended to lower the average of the death rate, because the rate is

always slightly higher in Manhattan and the Bronx than it is in the outlying boroughs.

Though it cannot be assumed that the lowering of the death rate of the city within the two years past was wholly due to the efficiency of the Board of Health, considering the new measures practiced with regard to the schools and the more rigid enforcement of the anti-spitting law, there can be no question that the reduction was chiefly due to the efficiency of the service, however much it may have been favored by the no less efficient service of the Street Cleaning Department and the unusually cool summers.

THE NEW HEALTH COMMISSIONER.

Dr. THOMAS DARLINGTON is an eminently worthy appointee by Mayor McClellan as successor to Dr. Lederle. Dr. Darlington was born in Brooklyn forty-five years ago. Graduated at the College of Physicians and Surgeons (Columbia University), 1880. But before he took up the study of medicine, took a special three years' scientific and engineering course at the University of the City of New York. He practised medicine at Newark, N. J., 1880-82; subsequently at Kingsbridge, New York City, until 1888; at Bisbee, Arizona Territory, until 1891, when he returned to Kingsbridge, where he has practised ever since.

He was district physician of the Seventh District, Newark, 1882; visiting assistant at St. Michael's Hospital, Newark, 1880-82; surgeon to the New Croton Aqueduct Corporation, New York, 1885-88; to the Harlem Canal Improvement Works, 1888; surgeon

to the Copper Queen Consolidated, and other mining companies, and to the Arizona and Southeastern Railway, Arizona, 1888-91.

He is one of the vice-presidents of the American Climatological Association, of which he has been a member for a dozen years, and has stood deservedly high in its councils. He was president of the Medical Board of the New York Foundling Hospital for two years and is its visiting physician, as also of the Fordham Hospital, the St. John's Riverside Hospital, the Seton Hospital for Consumptives, and consulting physician to the French Hospital.

Considering the continuance of John McGaw Woodbury, Commissioner of Street Cleaning; and Dr. A. H. Doty, Health Officer of the Port, and General William McAdoo, Commissioner of Police, ex-officio members, the Department of Health continues to be exceptionally well equipped.

CALIFORNIA.—Los Angeles, 135,000. Health report for December: Deaths, 288—48 under 5 years; death rate, 18.02. From specific infectious diseases, 96; tuberculosis, 68—"19 had lived here less than three months, 1 between two, three and six months, 3 between six and twelve months, 23 between one and five years, 6 between five and ten years, 14 over ten years, unknown 1."

COLORADO.—Denver, 175,000. Report for October: Deaths, 211; premature and still births, 12. Death rate, per annum, 14.46. Deaths from phthisis, 48—47 contracted elsewhere; typhoid fever, 127 cases, 14 deaths; smallpox, 18 cases; chickenpox, 4 cases; diphtheria, 40 cases, 4 deaths; scarlet fever, 32 cases; measles, 20 cases; erysipelas, 9, 2 deaths. Deaths from heart diseases, 9; pneumonia, 10; bronchitis, 4; nephritis, 15; cancer, 5.

CONNECTICUT.—Bulletin for November: Deaths, 1,167; 43 more than in October, and 84 more than in November of last year, and 109 more than the average number of deaths in November for the five years preceding. The death rate was 15.1 for the large towns; for the small towns, 14.2; for the whole State, 14.9. Deaths reported from infectious diseases, including diarrhea, 236—20.2 per cent. of the total mortality.

Cases of infectious diseases reported: Smallpox, Windsor Locks, 1; measles, 643 cases in 41 towns; scarlet fever, 132 in 40 towns; diphtheria and croup, 182 in 45 towns; whooping-cough, 864 in 15 towns; typhoid fever, 79 in 33 towns; consumption, 29 in 13 towns.

DISTRICT OF COLUMBIA, 295,103—90,353 colored. Report for the week ended January 9: Deaths, 148—38 under 5 years. Death

rates, 19.6 for the whites, 39.2 for the colored, and 25.6 for the entire population. The prevailing causes of death were: pneumonia, 22; consumption, 17; diseases of the kidneys, 16; and apoplexy, 10.

Cases of typhoid fever continue to diminish. At the close of the week there were 73 cases; 4 new cases were reported and 30 were discharged, which leaves 47 under treatment. Scarlet fever has increased from 38 cases last week to 42 now under treatment.

ILLINOIS.—State of Chicago's health for the year 1903: Month of December.—Including the 587 theatre-fire deaths, accounted for by the Coroner's office and the Police Department, but not yet reported at the close of the year to the Bureau of Vital Statistics of the Department, the total deaths for 1903 will number 28,940, instead of the 28,353 given in the appended statement of mortality for the year. This will increase the death rate from 15.04 to 15.35 per thousand of population. Deaths from violence were already more than 12 per cent. in excess of the average for the period since the census year 1900; but these 587 theatre deaths swell the excess to 41.5 per cent. over the yearly average of violent deaths.

Even with this addition to the total mortality the death rate is 6 per cent. lower than the yearly average since 1892, although it is 8.2 per cent. higher than that of 1901 and 5.3 per cent. higher than that of 1902.

Statement of mortality for the year 1903, compared with the preceding years, 1902, 1901. Populations: 1903, 1,885,000; 1902, 1,820,000; 1901, 1,758,000:

| | 1903. | 1902. | 1901. |
|---|---|---|---|
| Total deaths, all causes | 28,353 | 26,455 | 24,406 |
| Annual death rate per 1,000 | 15.04 | 14.53 | 13.88 |
| By sexes— | | | |
| Males | 16,253 | 14,927 | 13,468 |
| Females | 12,100 | 11,528 | 10,938 |
| By ages— | | | |
| Under 1 year | 4,909 | 5,144 | 5,044 |
| Between 1 and 5 years | 2,962 | 2,883 | 2,445 |
| Over 60 years | 5,316 | 4,917 | 4,883 |
| Principal causes of death— | | | |
| Acute intestinal diseases | 2,221 | 2,243 | 2,219 |
| Apoplexy | 636 | 604 | 593 |
| Bright's disease | 1,714 | 1,427 | 1,127 |
| Bronchitis | 1,005 | 978 | 866 |

| | | | |
|---|---|---|---|
| Consumption | 2,968 | 2,556 | 2,495 |
| Cancer | 1,059 | 1,074 | 1,003 |
| Convulsions | 619 | 651 | 667 |
| Diphtheria | 614 | 596 | 495 |
| Heart diseases | 2,091 | 2,098 | 1,947 |
| Influenza | 166 | 118 | 201 |
| Measles | 276 | 123 | 158 |
| Nervous diseases | 1,483 | 1,425 | 1,395 |
| Pneumonia | 4,630 | 3,433 | 3,127 |
| Scarlet fever | 297 | 445 | 165 |
| Smallpox | 47 | 5 | 4 |
| Suicide | 492 | 439 | 399 |
| Typhoid fever | 588 | 801 | 509 |
| Violence (other than suicide) | 1,492 | 1,441 | 1,275 |
| Whooping cough | 270 | 266 | 207 |

Statement of mortality for the month of December, 1903, compared with the preceding month and with the corresponding month of 1902. Death rates computed on estimated figures of mid-year populations of 1,885,000 for 1903, and of 1,820,000 for 1902:

| | Dec., 1903 | Nov., 1903. | Dec., 1902. |
|---|---|---|---|
| Total deaths, all causes | 2,354 | 2,124 | 2,607 |
| Annual death rate per 1,000 | 14.69 | 13.71 | 17.38 |
| By sexes— | | | |
| Males | 1,347 | 1,172 | 1,453 |
| Females | 1,007 | 951 | 1,154 |
| By ages— | | | |
| Under 1 year | 400 | 335 | 452 |
| Between 1 and 5 years | 214 | 180 | 299 |
| Over 60 years | 539 | 448 | 503 |
| Principal causes of death— | | | |
| Acute intestinal diseases | 81 | 96 | 149 |
| Apoplexy | 62 | 60 | 61 |
| Bright's disease | 166 | 148 | 149 |
| Bronchitis | 101 | 64 | 107 |
| Consumption | 228 | 192 | 236 |
| Cancer | 82 | 85 | 90 |
| Convulsions | 67 | 47 | 63 |
| Diphtheria | 59 | 80 | 82 |
| Heart diseases | 191 | 180 | 209 |
| Influenza | 13 | 2 | 11 |

| | | | |
|---|---|---|---|
| Measles | 7 | 3 | 15 |
| Nervous diseases | 120 | 120 | 128 |
| Pneumonia | 498 | 333 | 417 |
| Scarlet fever | 17 | 16 | 26 |
| Suicide | 42 | 40 | 36 |
| Typhoid fever | 36 | 56 | 132 |
| Violence (other than suicide) | 124 | 125 | 144 |
| Whooping cough | 5 | 6 | 34 |
| Smallpox | — | — | 4 |

### THE IROQUOIS THEATRE FIRE.

This terrible calamity of nearly six hundred deaths would not have occurred if the managers of that theatre had been required, as all theatre managers should be, to be familiar with knowledge of the causes and the means for preventing such disasters. William Paul Gerhard, C. E., wrote a little book on the subject (published by John Wiley & Sons, New York) a few years ago, of special significance in this regard. With reference to this most recent calamity ("Scientific American Supplement") he well says:

"The long list of theatres destroyed by fires breaking out during a performance and the numerous instances of fire breaking out during these hours, but which are put out before spreading, are proof sufficient that the dangers spoken of are constantly threatening the theatre-going public. . . .

"The lives of people in theatres, on the occurrence of fire, whether spectators, actors, musicians, chorus singers, ballet girls or stage hands, are endangered:

"1. By smoke, fire gases, heat, asphyxia, exhaustion.

"2. By fire burns.

"3. By jams, knocking over, falling down stairs, trampling, crush.

"4. By direct shock or fright.

"5. By accidents, such as falling of the central chandelier.

"If only plenty of exits are provided, so that, under all circumstances, the whole audience, even when frightened and suddenly thrown into a state of high mental excitement, can leave the building inside of two or three minutes, the fire-resisting qualities of the building are of less consequence, as regards the safety of the persons in the theatre. In fact, a theatre inferior in point of construction, but having exits as above described, would be safer than one built thoroughly fireproof, but otherwise not well arranged and not provided with sufficient stairs and exits, and where, there-

fore, in case of a false or real alarm of fire, or a panic from any cause, the people would be necessarily in grave peril."

INDIANA.—Statistics of the State Board of Health for November show that bronchitis was the most prevalent disease and tonsillitis the next. Pneumonia was more prevalent than in the same month last year, the deaths being 241 and 181, respectively. The total number of deaths reported was 2,518, an annual rate of 12.2. In the corresponding month last year 2,406 deaths were reported, which is a rate of 11.6. By important ages, the deaths were: Under 1 year, 322; 1 to 5, 175; 5 to 10, 98; 10 to 15, 54; 15 to 20, 83; 65 and over, 666. Some important causes of death were as follows: Consumption, 279; other forms of tuberculosis, 38; typhoid fever, 105; diphtheria, 68; scarlet fever, 18; measles, 6; whooping-cough, 6; pneumonia, 241; diarrheal diseases, 35; cerebrospinal meningitis, 20; influenza, 11; puerperal septicæmia, 11; cancer, 94; violence, 163; and smallpox, 1.

The city death rate during the month was 15.5, which is 3.3 higher than the State rate for the same month. In the corresponding month last year the rate was practically the same as this year. The country death rate is 10.4. In the corresponding month last year it was 9.7.

*Smallpox.*—324 cases with one death in 33 counties occurred in November—exactly the same number of cases and deaths as in October. In the corresponding month last year there were 441 cases, with two deaths, and 40 counties were invaded. Deaths from *tuberculosis,* 279, a rate of 135.2 per 100,000. The same month last year the deaths numbered exactly the same, which is another remarkable coincidence to be noted.

*Typhoid fever* caused 105 deaths. The death rate from this cause for the whole State was 50.9 per 100,000. The city rate was 44.7, country rate 54.4.

*Pneumonia* deaths 241, a rate of 116.8 per 100,000. In the corresponding month last year, the rate was 87.7. The disease prevailed very much more extensively in the cities than in the country, the rates being, respectively, city, 179.1 per 100,000; country, 84.5. Pneumonia does not lead consumption as a cause of death in Indiana, and has only done so in one or two months in the last four years.

*Violence* deaths, 163, rate 79.0. Of the violent deaths, 4 were murders, 27 suicides, and the rest accidents.

LOUISIANA.—New Orleans, 310,000—77,714 colored. Report for December, 1903: Total deaths, 287 white, 285 colored—752;

deaths under 5 years, white 76, colored 44. Death rates: Whites, 25.74; colored, 38.31 : 29.09. Deaths from typhoid fever, 5 white, 6 colored; influenza, 29 white, 3 colored; tuberculosis of the lungs, 56 white, 34 colored; pneumonia, 67 white, 22 colored; Bright's disease, 34 white, 16 colored; cancer, white 13, colored 6; senile debility, white 33, colored 14.

MASSACHUSETTS.—Boston, 600,929. Health Department report for September, 1903: Deaths, 843—306 under 5 years. Death rate, 16.83. Deaths from typhoid fever, 19; diphtheria, 9; phthisis, 97; cancer, 37; organic diseases of the heart, 63; bronchitis, 13; pneumonia, 24; broncho-pneumonia, 25; diarrhea and enteritis (under 2 years), 103; nephritis, acute, 22; Bright's disease, 11; external causes—violence, accidents, etc., 40.

Cases of contagious and infectious diseases reported: Chicken-pox, 8; cerebrospinal meningitis, 3; diphtheria and croup, 140; tuberculosis, 152; measles, 52; scarlatina, 65; typhoid fever. 126.

MICHIGAN.—There were 2,942 deaths returned to the Department of State for the month of December, or 319 more than reported for the previous month. Death rate was 14.1, as compared with 12.9 for November. Deaths of infants under 1 year, 490; from 1 to 4 years, 191; and of persons over 65 years of age, 944.

Important causes of death were as follows: Tuberculosis of the lungs, 158; other forms of tuberculosis, 33; typhoid fever, 48; diphtheria and croup, 96; scarlet fever, 17; measles, 16; whooping-cough, 23; pneumonia, 376; influenza, 49; cancer, 151; accidents and violence, 182.

There was a decrease in the number of deaths reported from typhoid fever, and the usual seasonal increase in deaths reported from pneumonia and influenza.

MINNESOTA.—Minneapolis, 240,000. Report for November: Deaths, 215—43 under 5 years. Annual death rate for twelve months ending November 30, 9.65. Deaths from typhoid fever, 9; consumption, 26; cancer, 16; organic heart disease, 11; other diseases of the circulatory system, 11; pneumonia and broncho-pneumonia, 21; Bright's disease, 10.

St. Paul, 175,000. Report for November: Deaths, 126—22 under 5 years; death rate, 8.40. Deaths from consumption, 8; pneumonia, 10; cancer, 10; typhoid fever, 1; scarlet fever, 4.

MISSOURI.—St. Louis, 645,000. Report for November: Deaths, 822—160 under 5 years; annual death rate, 15.48. Deaths from

zymotic diseases, 84; scarlatina, 9; diphtherian croup, 12; whooping-cough, 1; typhoid fever, 24; remittent fever and congeners, 3; diarrheal diseases under 5 years, 10; cancer, 34; phthisis, 98; bronchitis, 32; pneumonia, 68; other diseases of the respiratory organs, 43; diseases of the circulatory system, 72; Bright's disease and nephritis, 31; accident, 41.

NEW JERSEY.—Hudson County (Jersey City and environs), 421,692. Report for November: Deaths, 552—135 under 5 years; death rate, 15.7. Deaths from croup, 9; diphtheria, 15; scarlet fever, 9; whooping-cough, 2; typhoid fever, 5; all zymotic diseases, 50; phthisis, 64; bronchitis, 12; pneumonia, 93; cancer, 8; violence, 36; still births, 45.

Newark, 266,000. Report for the week ended January 9: Deaths, 124—32 under 5 years; death rate, 23.70. Deaths from contagious and infectious diseases, 34; diphtheria, 5; consumption, 16.

NORTH CAROLINA.—Bulletin of mortality for November summarizes reports of 28 towns, with aggregate population 163,200: white, 94,950, colored, 68,250; deaths, respectively, 113, 152: 265; death rates, 14.3, 26.7: 19.5. Deaths: from consumption, white, 12, colored, 23: 35; heart diseases, white, 9, colored, 14: 23; diarrheal diseases, white, 13, colored, 13: 26; typhoid fever, white, 9, colored 4: 13; deaths under 5 years, white, 29, colored, 48: 77; still born, white, 5, colored, 13: 18.

OHIO.—Cleveland, 420,000. Report for November: Deaths, 522—151 under 5 years; annual death rate, 14.91. Deaths from typhoid fever, 20; diphtheria and croup, 26; tubercle of lungs, 48; pneumonia, 43; broncho-pneumonia, 11; cancer, 26; heart diseases, 27; Bright's disease, 19; diarrhea and enteritis (under 2 years), 14; early infancy congenital icterus, debility, etc., 43; senile debility, 18; still births, 35.

PENNSYLVANIA.—Philadelphia, 1,378,624. Report for week ended January 2: Deaths, 607—153 under 5 years. Deaths from apoplexy, 33: Bright's disease, 9; consumption, 62; diphtheria, 23; croup, 3; diseases of the heart, 51; typhoid fever, 20; nephritis, 16; pneumonia, 95; cancer, 17. *Smallpox* cases reported, 78; deaths, 11.

Pittsburg, 354,000. Report for the week ended January 2: Deaths, 163—53 under 5 years; annual death rate, 23.94. Deaths

from diphtheria and croup, 5; whooping-cough, 3; smallpox, 4; typhoid fever, 13; tuberculosis, 10; pneumonia, 26; bronchitis, 7; cancer, 5. Typhoid fever, according to most recent reports from other sources, is approaching epidemic prevalence, attributed to the same cause as Butler's epidemic—foul water and insufficient vigilance with regard to cases brought hither by persons from Butler.

UTAH.—Salt Lake City, 75,000. Report for November: Deaths, 45—6 under 5 years. Annual death rate, 7.20. Deaths from typhoid fever, 3; tubercle of lungs, 4; cancer, 4; organic diseases of the heart, 3; pneumonia, 3; Bright's disease, 4; senile debility, 5.

WASHINGTON.—Seattle, 125,000. Report for November: Deaths, 95—13 under 5 years. Annual death rate, 9.12. Deaths from tuberculosis, 5; typhoid fever, 4; diphtheria, 1; organic heart diseases, 15; Bright's disease, 4; cancer, 2; pneumonia, 6.

WISCONSIN.—Milwaukee, 315,000. Report for November: Deaths, 325—81 under 5 years; annual death rate, 12.55. Deaths from typhoid fever, 4; diphtheria and croup, 5; phthisis, 29; pneumonia and broncho-pneumonia, 29; bronchitis, 15; cancer, 17; organic heart disease, 29; diarrheal diseases, under 2 years, 15; Bright's disease, 21; congenital debility, 25; senile debility, 21; violence, 25; suicide, 6; accidents, 18.

PHILIPPINES.—Manila, 219,941. Report for July, 1903: The decrease in the population of the city since the Board of Health census of 1901 is attributed to the return to the provinces of persons who had previously sought security in Manila as a result of the unsettled conditions prevailing in the country districts after the late insurrection.

Population of Manila.—Americans, 4,389; Filipinos, 189,782; Spaniards, 2,528; other Europeans, 1,117; Chinese, 21,230; all others, 895; total, 219,941.

During the month there were 42 cases of cholera in the city, with 38 deaths. It will be noticed that the disease was of a very virulent type. These cases were scattered through the month, only one or two occurring daily. During July the city was threatened with a most serious outbreak of cholera, as a very active epidemic developed in the towns of Montalbon, San Mateo, and Mariquina, lying along the Mariquina River above the intake of the Manila

water supply. As the authorities of Rizal Province, in which these towns lie, showed themselves unable to properly cope with the situation, the Board of Health for the Philippine Islands assumed immediate charge of sanitary matters, sent a corps of physicians, sanitary inspectors, and disinfectors to the Mariquina Valley from Manila, obtained a larger military guard for the purpose of quarantining the river, established the pail conservancy system for the reception of human excreta in Mariquina and San Mateo, and organized an efficient corps of scavengers for the collection and proper disposal of the same. By these measures the infection of the Manila water supply, which at first appeared almost inevitable, was avoided and the disease stamped out in thirty days. Much credit for the results obtained should be given to Dr. Arlington Pond, the medical inspector in charge, who handled this most difficult problem with marked energy and discretion.

As a result of the measures taken for its control, and particularly as a result of the preventive inoculation of the Chinese, the plague situation for the month showed marked improvement.

With the establishment of the rains the usual seasonal decrease of smallpox has been noted.

Deaths from all causes, 620—363 under 5 years. Aggregate annual death rate, 33.21. Americans, 4, death rate, 10.74; Filipinos, 569, death rate, 35.32; Spaniards, 3, death rate, 13.98; other Europeans, 2, death rate, 21.09; Chinese, 41, death rate, 22.75; all others, 1, death rate, 13.16.

Deaths from typhoid fever, 7; intermittent fever and malarial cachexia, 10; cholera, 33; dysentery, 18; plague, 7; other epidemic infections, 23; tuberculosis of the lungs, 68; eclampsia (non-puerperal), 42; convulsions of children, 154; bronchitis, 56; diarrhea and enteritis, 34; cancer, 3; pneumonia, 1!

CUBA.—Chief Sanitary Officer reports on vital statistics for the month of October, 1903: Within the district of Havana the total mortality was 476, against 425 in the preceding 31 days, and against 412 in October, 1902. Annual death rate of 21.35. The mortality among children under 5 years old, 115, as against 123 in the preceding month, and 98 in October of last year. The increased death rate as compared with that of the preceding month was principally due to scarlet fever (+ 20); cerebral hemorrhage or congestion (+ 11); diseases of the heart and arteries (+ 15); diseases of the kidneys (+ 6); infantile tetanus (+ 4). There was, however, a marked decrease in the deaths from tuberculosis

(82 against 93); from infantile diarrhea (11 against 25); from simple meningitis (24 against 37).

The Havana Sanitary Department has been kept busy during this month endeavoring to control the propagation of scarlet fever, which, though of a mild type, has reached a figure unprecedented in our records. On the 30th of September there were 82 cases on hand, 6 deaths having occurred in that month, while on the 31st of October there were 465; 534 new cases having been reported during the month, with 26 deaths. All the confirmed cases, even those of a mild type, have been isolated either at their homes or in a special ward at "Las Animas" Hospital; that ward and its *personnel* being carefully isolated from the rest of the establishment. Schools where any cases had developed were ordered to be closed, and children from infected premises forbidden from going to school. A sign of warning is placed at the door of every infected house or room, and, when necessary, a guard is placed at the entrance to prevent undue communication. The premises are disinfected as soon as practicable after the patient has been removed or after the skin has ceased to peel off. Laundries in which cases have been discovered are either closed or not allowed to deliver clothes without previous disinfection by the Department.

No case of yellow fever or of smallpox originating on the island has been reported. Three cases of yellow fever have, however, been imported from Veracruz. One arrived October 6th, on the steamship Monterey; the other two arrived October 9th on the steamship Prinz Adalbert; all three were discharged cured.

Of the 82 municipalities on the island 61 (including Havana and representing an aggregate population estimated at 1,534,766 inhabitants) have sent in their reports showing 1,694 deaths from all causes in the month of October, equivalent to the annual death rate of 12.93 per thousand. No quarantinable diseases figure in any of those reports. Sporadic cases of scarlet fever have occurred in Matanzas, Batabano, Guines, Guanajay, Cienfuegos, all of which towns have railroad communication with Havana, but so far in none of those places has the disease showed any signs of spreading.

Report for the year 1902: The death rate of Havana from all causes decreased from 48.20 in 1871 to 21.20 in 1902; the mortality from tuberculosis decreased from 7.38 in 1872 to 3.43 in 1902; the mortality from yellow fever decreased from 5.21 in 1871 to *nil* in 1902. The same is true for smallpox, which disease caused a death rate of 5.92 during 1871, with no death reported from this cause during 1902.

## BOOK REVIEWS.

CHILDREN OF THE TENEMENTS. By JACOB A. RIIS, author of "The Making of an American," "The Battle with the Slums," "How the Other Half Lives," etc. 12mo. Pp. 387. Price $1.50. New York: The Macmillan Co.

A little about Mr. Riis will doubtless add to the reader's interest in "Children of the Tenements" and other books which he has written. He was born in 1849 in the town of Ribe, on the northeast coast of Denmark. His boyhood and youth, of which he

MR. JACOB RIIS.

writes with the most genuine charm in the early portion of "The Making of an American," were spent in his native town, except for four years when he was in Copenhagen learning his trade as a builder's apprentice. But all this time he loved his boyhood's sweetheart; and when her parents decided that a common carpenter would not do for their beautiful daughter, he went out into the world to seek his fortune. It was on Whit-Sunday, 1870, that the Glasgow steamer landed Mr. Riis in New York, "with a pair of strong hands and stubbornness enough to do for two." Thereafter he plunged into any kind of work which he could get to do, at one time toiling among a settlement of honest Welshmen in the

back hills, later in a coal mine, again for a truck-farmer, still later in a brick yard, always hunting for some steady employment that would give him a living and a future. It was a long road indeed before he learned to make his way against the current and really began life as a newspaper man. He made a success of his newspaper, and returned to Denmark for his sweetheart; but it was not for some months after his marriage that he really began the work of his life as a reporter at police headquarters on Mulberry street, New York.

He plunged waist deep into everything that was worth while, every movement for law and order and decency and right and freedom and better civilization. But through it all he had a great deal of fun, besides doing an immense amount of good; and that is one reason why his book, "The Making of an American," published two years ago, is still one of the most popular books in the United States. Much of it, though happy and gay, is more deeply and genuinely affecting than the saddest fiction ever written; and from beginning to end it tells the story of one of the bravest fights against all kinds of obstacles that has ever been waged. The book abounds, too, in good stories, such as the famous one about the fireman who, wishing to honor the memory of the dead reporter, but being obliged through press of time to leave it to the florist, found themselves on the solemn occasion face to face with a huge wreath bearing the legend, "Admit Within Fire Lines Only." "We will strive together for all that is noble and good" has been the text of Mr. Riis' whole life; and he sums up his career in the two simple sentences: "I have been very happy. No man ever had so good a time." And the book is all written with the vigor and the almost riotous zest in living and doing which has been Mr. Riis's driving power throughout his notable career.

"I never could fake anything; I have sometimes wished I could," he remarked in reply to some inquiries about "Children of the Tenements." And he went on to say that every incident related in the book as fiction actually happened within his own knowledge. Incidents have been grouped together which did not happen consecutively; but every incident and scene has actually happened in the way set forth. Some things can be told a great deal better in fiction than through any other medium; and this volume presents the most complete and the truest and the most varied picture of the New York slums which has ever been created. The fact that the pooper people are the more kind and charitable and generous they are to each other has never been more strongly brought out.

The people of the tenements as they are in their everyday lives, and in their holiday seasons, too, become living, breathing human beings to the reader of this book, who finds himself entering into their joys and sufferings, their hard work and their play and their deprivations, and learning to know them as human beings with all the traits and wishes and qualities and hopes that the rest of us have. For a quarter of a century Mr. Riis has been better acquainted with the New York tenement house region than anyone else who could write, and his new volume portrays with wonderful skill and unfailing sympathy and love the significant and interesting people who live in that quarter of the Metropolis. Three or four of these are Christmas stories, and all have to do with the children, young or old, of the tenements. The book is brought fittingly to a close by an article entitled "Making a Way Out of the Slum." Some of these stories are merry and lighthearted as the children themselves; others are powerful or tragic, two or three are gloomy, and still others are whimsical.

The volume is illustrated with a number of excellent pictures by Mr. C. M. Relyea and others who have made a special study of tenement house life, and the publishers have given it an attractive dress. It rounds out and completes the story of what Mr. Riis has seen and contended with in the long "Battle with the Slum."

INFECTION AND IMMUNITY; OR, THE CAUSES AND PREVENTION OF INFECTIOUS DISEASES. By GEORGE M. STERNBERG, M.D., LL.D., Surgeon-General U. S. Army (retired); ex-President of the American Medical Association, and of the American Public Health Association; Honorary Member of the Epidemiological Society of London, of the Societé Français d'Hygiene, of the Royal Academy of Medicine of Rome, etc. 8vo. Pp. 293. Illustrated. Price (by mail, $1.90), net, $1.75. G. P. Putnam's Sons, New York and London.

This volume is intended for non-medical readers, hence it is for the most part devoid of technicalities and the discussion of the more or less theoretical investigations of the nature of the "antitoxins," "agglutins," "precipitins," "bacteriolysins," etc. Nevertheless, the relation of this line of investigations is so clearly implied as to render it comprehensible to the lay reader. Moreover, while the book is intended for non-medical readers, it is none the less commendable to the medical, and particularly to sanitary officers, for its lucid and commendable practicability. All infectious diseases are considered preventable diseases, and the purpose

of the book is to indicate the necessary measures and means for preventing them. It is divided into chapters, as follows: General Remarks upon Infection; Disease Germs; Channels of Infection; Susceptibility to Infection; Methods of Disinfection; Tests of Disinfection; Disinfection by Heat; Sunlight as a Disinfectant; Disinfection by Gases; Various Chemical Disinfectants; Natural and Acquired Immunity; Antitoxins; Plague; Cholera; Forms of Fever; Tuberculosis; Diphtheria; Influenza; Pneumonia; Smallpox; Measles; Wound Infections; Tetanus; Hydrophobia.

BACTERIA, YEASTS AND MOLDS IN THE HOME. By H. W. CONN, Ph.D., Professor of Biology in Wesleyan University, Middletown, Conn.; author of "Agricultural Bacteriology," "Bacteria in Milk and Its Products," "The Story of Germ Life," "The Method of Evolution," etc. 12mo. Pp. 300. Illustrated. Price $1.00. Boston, U. S. A., and London: Ginn & Company.

Molds, which are the cause of mildew, the spoiling of many foods, and the decay of fruits; yeasts, which are the foundation of fermentation in the raising of bread; and bacteria, which cause food to spoil, meat to decay, and contagious diseases to spread—all these phenomena which are of the most vital importance, are presented in an interesting and helpful manner. The subjects are discussed in a popular manner, devoid of technical terms and admirably adapted to the needs of the housewife, the student of domestic science, and all others interested in home economics.

The author explains the various actions of bacteria, and points out the sources of trouble and the principles which underlie the methods to be adopted for avoiding their effects. Special attention is paid to the problems of food preservation and to the practical methods which can be used in the home for preventing the distribution of contagious diseases.

To render the work more useful for classes in domestic science there is added an appendix containing directions for a series of simple experiments which will give to the student a practical knowledge of the most important properties of micro-organisms.

THE PRACTICAL CARE OF THE BABY. By THERON WENDELL KILMER, M.D., Associate Professor of Diseases of Children in the New York School of Clinical Medicine; Assistant Physician to the Out-Patient Department of the Babies' Hospital, New York; Attending Physician to the Children's Department of the West Side German Dispensary, New York. 12mo. Pages xiv-158, with 68

illustrations. Extra cloth, $1.00, net, delivered. Philadelphia: F. A. Davis Company, 1914-16 Cherry street, Publishers.

A concise presentation of such knowledge as every mother and nurse should possess. It begins with the bath, its temperature, when and how to use it, and proceeds to describe the needful clothing, material and seasonableness indoors and out. Food and feeding, weaning, and incidental conditions requiring attention for the promotion of healthy development. Gives a lucid description of the early symptoms of the diseases to which infants and children are particularly liable; tells how to meet emergencies, and concludes with a number of practical food recipes. The illustrations throughout are excellent and instructive.

REPORT OF THE COMMISSIONER OF EDUCATION FOR THE YEAR 1902. Vol. I. Pp. cxii, 1176. Washington: Government Printing Office.

The enrollment in schools and colleges, public and private, in the United States, during the year was 17,460,000—an increase of 160,770 over the previous year. Of this number there were enrolled in public institutions supported by taxation and funds belonging to the States and municipalities, 16,041,016, as against 15,710,394 for the previous year. Moreover, there were pupils enrolled in special institutions more or less educational in their character and more or less of a practical and business character: city evening schools, business schools, Indian schools, reform schools, orphan asylums, private kindergartens, etc., 620,840. All these are tabulated and a comparative summary presented, showing the increase from decade to decade for more than thirty years in common schools—including under this designation schools of the elementary and secondary grades supported from public funds; by which it appears that in the last six years of the period the per cent. of the total population enrolled in the common schools has not materially changed, being between 20 and 21 per cent. of the entire population, and about 72 per cent. of the entire number of persons from 5 to 18 years. The number in daily attendance during the sessions of the schools has risen from about 4,000,000 in the year 1869-70 to nearly 11,000,000 in the past year. Meanwhile, the number of women teachers has risen to 317,204 out of a total number of 439,596. Twenty-two years ago the percentage of male teachers was nearly 43, while the past year it had fallen below 28. The average salary of teachers shows a slight increase, that of men being nearly $50 a month, and of women nearly $40. The

average expenditure per pupil of average attendance has constantly increased since 1880, the total expenditure being $12.71 per pupil in 1880 and $21.38 in 1902.

The number of public high schools increased from 2,526 in 1890 to 6,005 in 1900, and to 6,292 in 1902.

The number of students in universities and colleges during the year was 119,496—an increase of 4,225 over the previous year.

The college-bred negro is the subject of a special chapter. A report by Prof. W. E. Burghardt Du Bois, of Atlanta University, based on a study of 2,331 graduates, of whom 1,941 were from negro and 390 from white colleges, tends to show that the standing and character of negro students in Northern white colleges are at least as good as those of the average of white students. The chosen field of the college-bred negro appears to be in the South. Nearly 90 per cent. of the Southern-born graduates remained in the South, while of the Northern-born about 50 per cent. went South. That there are so many earnest spirits among the youth of the race is an encouraging sign.

The systems and status of education in foreign countries are also presented in considerable detail.

Education of the Will.—The closing lecture of the course in Pedagogy, delivered at Sarbonne, June 22, 1899, by F. Buisson, Professor at Sarbonne, is the subject of a special chapter, eminently worthy of separate publication and the widest possible distribution.

Altogether the report is replete with information of practical importance to all persons interested in the progress of education and the means by which it may be promoted.

ANNUAL REPORT OF THE BUREAU OF ANIMAL INDUSTRY, 1892. 8vo. Pp. 651. Department of Agriculture, Washington: Government Printing Office.

It opens with a concise but comprehensive statement of the work by D. E. SALMON, D.V.M., Chief of the Bureau. This is followed by twenty-eight special reports on subjects of interest to all persons concerned with the animal industries of the United States and animal diseases in their relation to the public health. Particularly worthy of notice are the reports on "The Duration of the Life of the Tubercle Bacillus in Cheese," by F. C. Harrison; "Bovine Tuberculosis and Other Animal Diseases Affecting the Public Health," by D. E. M. Salmon, and "Contagious Diseases of Animals in Foreign Countries," by George Fayette Thompson. Indeed, the volume altogether is replete with matter of interest to sanitarians.

THE WORLD'S COMMERCE AND AMERICAN INDUSTRIES. Graphically illustrated by 86 charts. Prepared by John J. Macfarlane, A.M., Librarian. Price 50 cents. The Philadelphia Commercial Museum.

A brochure of 111 pages, illustrating the progress and present condition of the commerce of the world, of the manufacturing industries of the United States, and of British and American shipping.—The graphic method shows more clearly than statistics alone would do what proportion of the world's trade belongs to each of the principal nations, and the relative importance, from a manufacturing standpoint, of the leading cities of the United States.

An alphabetical list of the cities of the United States having an output of over $20,000,000 of manufactured goods, according to the census of 1900, is also given, with the leading industries of each city.

BOOKS AND PAMPHLETS RECEIVED.

Disinfection and the Preservation of Food. By Samuel Rideal, D.Sc.

Practical Hygiene. By Charles Harrington, M.D.

The Blues, Causes and Cure. By Albert Abrams, A.M., M.D., F.R.M.S.

Hygiene and Sanitation. By Seneca Egbert, A.M., M.D.

Self-Cure of Consumption without Medicine. By Charles H. Stanley Davis, M.D., Ph.D.

Spotted Fever (Tic Fever) of the Rocky Mountains. By John F. Anderson, Hygienic Labroatory Bulletin 14, Washington, D. C.

Clinical Study of Organic Iron. By John V. Shoemaker, M.D., Philadelphia.

Aphtha and Herpes Contracted by Children Drinking Milk from Cows Suffering with Foot and Mouth Disease. By E. F. Brush, M.D., Mount Vernon, N. Y.

Malignant Tumors of the Naso-Pharynx. By Francis J. Quinlan, M.D., New York.

Recent Advances in the Management of Diseases of Children. By Charles Gilmore Kerley, M.D., New York.

Management of Catarrhal Pneumonia in Infants. *Ibid.*

Sources and Methods of Infection in Pulmonary Tuberculosis. By J. O. Cobb, M.D., U. S. Public Health and Marine Hospital Service.

Some Recent Advances in Medical Therapeutics. By Thomas E. Satterthwaite, M.D., New York.

Antiseptic and Germicidal Properties of Glycerin. By M. J. Rosenau. Bulletin 16, Hygienic Laboratory, Washington, D. C.

Management of Exacerbations in the Course of Pulmonary Tuberculosis. By John F. Russell, M.D., New York.

Was it Wise of the American Medical Association to Change its Code of Ethics? By D. W. Cathell, M.D., Baltimore, Md.

Child-Labor Legislation. Handbook 1904. National Consumers' League, 105 E. Twenty-second street, New York.

## CONTEMPORARY LITERATURE.

### SUCCESSFUL WOMEN OF AMERICA.

The tendency of successful women to marriage does not seem great, the per cent. being only 54. In every case, except the minister and lawyer, the table shows less than sixty per cent. married, and it seems probable that a large number of the women in these professions married before they entered professional life. The journalist comes next in the per cent. married, while the artist falls to 42 per cent., and the educator runs very little risk—if she considers it a risk—her chances of matrimony being only 26.3 per cent., or a little over one to four. The cause of this invites speculation. Is it merely disinclination on her part, or is it because she has less opportunity for meeting congenial men; or can it be that her acquisition of knowledge and possibly the *instructive habit* makes her less attractive to men? At any rate, success and matrimony do not seem to go hand in hand with the educator. It will doubtless cause surprise that the table shows only about half the successful actresses married. This may be due to their omitting the fact of their marriage, because they find it to their advantage professionally to be supposed unmarried, and it may possibly be due to the fact that they seem to *unmarry* with so much ease.—Amanda Carolyn Northrop, January "Popular Science Monthly."

Mr. H. B. Marriott Watson's "Nineteenth Century" article on "The Deleterious Effect of Americanization Upon Woman," which has attracted so much notice and has been read with mixed emotions by Americans, is published entire in "The Living Age" for December 5.

### TROUBLE ON THE TRAIL.

The movement of Texas cattle northward had hardly begun before it was noticed that a malignant disease broke out among native cattle along the trail over which the driven herd had passed.

Kansas stockmen, living along the trail or on the prairies where the Texas cattle were located, lost from 50 to 90 per cent. of their cattle. The disease raged throughout all the States of the middle West. In the spring of 1868, large numbers of Texas cattle were shipped up the Mississippi and scattered through the States of Illinois, Indiana, and Kentucky. The disease broke out in almost every community where Texas cattle were located. In one Illinois community five thousand cattle died of "Texas fever," and in another eighteen thousand. One Illinois farmer started three hundred and twenty fat cattle to market after they had been in contact with cattle from Texas; two hundred and twenty-four died before they reached their destination. According to the health officers of Chicago, in 1868 every cow but one living within two miles of the stock-yards where Texas cattle were kept perished of the dread disease. All over the West a strong feeling grew up against admitting Texas cattle, and, in some cases, force was used by stockmen along the trail to protect their cattle from destruction. Nor was the alarm caused by the disease confined to the West. Infected cattle had been shipped to the Eastern markets, and were dying along the way and in the New York stock-yards. The question as to the effect of such diseased flesh upon human health was a new one, and caused much uneasiness. The matter was taken up by the cattle commissioners of New York State, and the Board of Health of New York City made a vigorous effort to check the importation of diseased cattle from the West. . . .

Nothing positive was known in regard to either the cause of the disease or the manner of its transmission until the subject was taken up by the Bureau of Animal Industry in 1889. Under the general supervision of Dr. D. E. Salmon, chief of the bureau, a systematic investigation of the subject was begun at the experiment station, near the city of Washington. In the laboratories of the station, one of the best pieces of biological research that this country has witnessed was carried on by Dr. Theobald Smith, Chief of the Division of Animal Pathology, now a member of the Harvard medical faculty.—From "The Texas Cattle Fever: How Science is Winning a Long Fight," by Prof. Charles Shirley Potts (Agricultural and Mechanical College of Texas), "American Monthly Review of Reviews" for January.

### BEANS VERSUS LITERATURE.

The best that may be said for Thoreau's regimen of beans is, not that that immortal diet was merely wholesome or cheap, or

even that it was transmuted into delightful literature—but that Thoreau liked it. He was catering for himself and to himself. When Byron came of age, he provided the conventional roast ox and ale for his tenants in honor of his majority, and then betook himself to London, where he dined alone upon his favorite delicacy, ham and eggs. He catered for his public at Newstead, and to himself in town. But the only editors who permit themselves such solitary luxury of personal indulgence are the young men who own, write, and print the queer little 4½ x 7 magazines with still queerer names. They give no hostages to fortune except paper, printer's ink, and time. If you would seek a better analogy to the real editorial function, follow some excellent citizen of Baltimore, or of a foreign city where marketing bears as yet no social stigma, as he journeys to the public market, with basket upon his careful arm, intent upon selecting a dinner for his family. —The January "Atlantic."

### THE CARE OF THE COMPLEXION.

A woman's complexion gives her more concern than anything else, for it is one of her chief attractions. If the skin is coarse and covered with pimples or other blemishes she loses more than half her charm, and, not only that, she looks unwholesome. It is within the power of almost every one to have a healthy skin. Doubtless many poor complexions are due to constitutional troubles, indigestion, imperfect circulation, etc. These in nearly every case can be remedied by the physician. Moles, birthmarks and other such blemishes also can usually be removed by the surgeon or skin specialist. Other facial detractions, such as pimples and blackheads, it is largely within the province of the individual to treat; at least she can greatly assist the physician by proper care of the complexion. A beneficial system of facial treatment is described by Dr. Grace Peckham Murray in a very instructive paper on the complexion in the February "Delineator." The illustrations are an effective addition to the article.

### WHAT IS A SCAB.

Under the definition that a scab is *one who gives more value for the same price than another,* it would seem that society can be generally divided into the two classes of the scabs and the non-scabs. But on closer investigation, however, it will be seen that the non-scab is almost a vanishing quantity. In the social jungle everybody is preying upon everybody else. As in the case of Mr.

Rockefeller, he who was a scab yesterday is a non-scab to-day, and to-morrow may be a scab again.

The woman stenographer or book-keeper who receives forty dollars per month where a man was receiving seventy-five is a scab. So is the woman who does a man's work at a weaving machine, and the child who goes into the mill or factory. And the father who is scabbed out of work by the wives and children of other men, sends his own wife and children to scab in order to save himself.—Jack London in the January "Atlantic."

---

THE PROCTOR THEATRES.

A few Sundays ago the vast reading public of New York City was somewhat mystified to understand the meaning of a very small but significant advertisement, appearing in certain obscure places in all the daily newspapers. Each advertisement had something to say about the "Proctor Plan." When Mr. Proctor was asked as to the solution of the problem, he simply answered: "The 'Proctor Plan' just consists in taking care of the Proctor audiences at the Proctor theatres; that is to say, it is a part of the 'Proctor Plan' to furnish each auditor with a clean, wholesome show, and plenty of it; with courteous attention from the moment one enters the doors, until one leaves it; with pleasant and agreeable surroundings, alike for young and old, and finally to leave all comers with the impression that they have received more than their money's worth, which in all cases is really a fact."

That veteran but gay and graceful minstrel, George H. Primrose, who has been nearly thirty-five years on the stage, and still gives the impression of perennial youth, had something to say recently about the Proctor playhouses, in which he is at present playing. "In all my long experience," said Mr. Primrose, "I have never passed a more pleasant engagement than I am now playing on the stages of Mr. Proctor's various theatres. They show me most conclusively the high degree of perfection attained by the modern vaudeville playhouse. Twenty, yes, even ten years ago, I would not have believed it possible that the patrons of what we were then wont to call a variety show would ever be enabled to enjoy their favorite form of entertainment amid luxurious surroundings, managed with such rare skill, and affording so much delight to the thousands of people gathered within the four walls. Not alone does the beauty of the theatres themselves compel attention, but in the careful detail of the handling of the stage there is much to wonder at and to praise."

# THE SANITARIAN.

## MARCH, 1904.

NUMBER 412.

## A STUDY OF THE CLIMATE OF LONG ISLAND.*

By WILLIAM H. ROSS, Brentwood, L. I.,

Member Suffolk County Medical Society; Associated Physicians of L. I.; State Medical Society of New York; American Medico-Psychological Society; Consulting Physician Manhattan State Hospital, etc.

The proximity of Long Island to the greatest center of population in this country, and the increasing use of its territory as a resort and place of residence, make valuable any study of its climatic features.

Though Long Island is one of the oldest settled portions of the United States, little seems to be known of its healthfulness by the medical profession in general. Medical men who have been everywhere and who know everything have never been on Long Island, nor know anything about it. It is often thought to abound in marshes, malaria and mosquitoes. Practically the opposite is true. It is, for the most part, a dry, sandy plain, rising gently from the south shore to the north, and terminating in a bluff, with beautiful bits of scenery on land, and magnificent views at sea. To the north the distant hills of Connecticut, and to the west, the palisades of the Hudson can be seen, and to the south, the waters of the Atlantic in all of its grandeur.

Through the center of the island is a range of hills from 100 to 400 feet in height. Between the bluff and the central hills is an elevated plain of fertile soil supporting a growth of deciduous trees, many of the old ones of large size. South of the central hills, sloping to the water with a fall of about twenty feet per mile, is an almost unbroken sandy plain covered by a pine forest.

*Read at Meeting of the Medical Society of the State of New York, January 27, 1904.—Advance Sheet from Transactions by courtesy of the Secretary.

Along the south shore lies the Great South Bay, from two to five miles wide and 100 miles long, and separated from the ocean by a sandy bar averaging one-half mile wide—varying in width by the force of violent storms.

There are two navigable rivers on the island, and a number of small inland lakes of fresh water; especially in the eastern half. Some of these have no visible inlet or outlet.

The central part of the island, only fifty miles from New York City, is yet largely an unbroken forest, except for the small villages, and is in such a state of nature that hundreds of wild deer inhabit its more remote portions.

Long Island, as you know, lies about twenty miles off the New England coast, separated by that inland sea, Long Island Sound. It is approximately fifteen miles wide, and one hundred and twenty miles long, containing nearly 1,000,000 acres; and yet with only 1,682 square miles of territory, it has 250 miles of water front, counting the Sound, its bays, and the ocean. It is the only considerable portion of the Atlantic coast entirely surrounded by water, and receives all its attendant influence diminishing the difference between the temperature of winter and summer, and day and night.

## *Formation.*

Long Island is of glacial formation. The greater part consists of sand and gravel and occasionally a layer of clay, overlaid with drift, growing thinner toward the south shore. The drift proper is a heterogeneous mixture of sand, gravel, clay, and, at the western end, boulders. Under this is a deposit of coarse yellow gravel and sand, brought to its present place by glacial action, but existing in a stratified condition before the arrival of the glacier. This yellow gravel and sand drift in a comparatively unaltered state forms the soil of the pine barrens of the region south of the central hills. (Merrill.) At the western end of the island the glacial drift proper attains its maximum depth, and diminishes toward the eastern end, its average depth for fifty miles being not more than three or four feet.

The strata underlying the drift contain, at the western end of the island, many rocks tilted at an angle and identical with the formation of Manhattan Island. A large amount of sand and gravel, increasing in amount toward the eastern end, and in places strata of clay are found. The clay overlies white laminated sands,

and under these again are layers of clay and layers of sand, the sand largely predominating. Wells bored at different parts of the island show that under the sandy loam, varying in depth from an inch or two to three feet, the soil is made up of stratified layers of sand and gravel with an average of not more than three feet of clay per hundred feet. My own specimens from several places show no clay to a depth of 100 feet; in other places only three feet of clay was found to a depth of 200 feet. In one well near my home vitrified clay to a depth of six feet was found, fifty feet under the surface, but except thin layers of clay at varying depths—due probably to glacial folding—only laminated sand and gravel is found to a depth as deep as the deepest wells have been made.

The clay strata under the surface of the island dip toward the south, falling about 10 per cent., as shown by the ground-water level, but thrown into numerous folds, pitched at varying angles.

The stratified sands and gravel which overlie the supposed Cretaceous and Tertiary beds contain fossils which determine their age beyond question. Their high elevation must be due to their having been raised to their present position by glacial action. The pressure of the ice sheet threw into a series of folds the stratified sand, gravel and clay, and then pushing onward rode over them carrying an immense mass of sand, gravel and débris from New England and New York.

It is probable that Long Island Sound was a body of water—an arm of the sea—previous to the arrival of the ice sheet; for opposite the narrowest parts the glacial drift on the island is greatest, and least opposite the widest part, where the ice sheet lost the greater part of its glacial drift.

Of course many changes have occurred on the island since the retreat of the glacier. These are mainly on the surface and in the coast line. The swift westerly currents are wearing away the eastern end and depositing it along the shores. The bays are becoming slowly shallower.

It can be shown by a study of its geology that the island is made up mainly of sand and gravel and thin strata of clay, dipping from north to south. Its ground-water currents must, therefore, flow from north to south, and the drainage in the same direction. Wells located to the north of a dwelling will, therefore, be less liable to contamination than if located on the opposite side; and cesspools located on the south side of a residence

will be less liable to contaminate the wells than if their position were reversed.

The character of the soil modifies the climate in respect to fogs. They are more frequent over wet clay soil than over a dry, well-drained soil, such as the sandy soil of Long Island.

Old Greenwich village in New York was traditionally healthy, and this region is so to-day. Epidemics that attacked the old city one hundred years ago found no lodgment in Greenwich. This has always been attributed to the fact that the underlying soil, to the depth of fifty feet or more, is pure sand, and provides excellent drainage. The same condition prevails on Long Island, with the difference that instead of the sand being fifty feet deep it is several hundred feet deep.

The water of the island is very pure. Because of the character of the soil it is freer from organic and inorganic material than wells of other regions not having a sand and gravel soil. There are a great many never-failing springs coming up from the sand along the shores and in the Nissequogue Valley, with a temperature of about fifty degrees the year round; and even in the highlands and in the sandy forests are numerous ponds, all of them sending forth streams of clear, cold, sparkling water.

The existence of the fresh-water lakes referred to as having no inlet or outlet depends on the fact that a basin has been formed in the clay stratum by glacial folding. These necessarily fill from the ground water, and remain pure because of the water filtering through the sand.

### *Temperature.*

During the decade, 1890 to 1900, a consecutive period of 3,650 days, the writer made, at Brentwood, situated in the pine belt—about in the geographical center of the island—daily observations of temperature, wind direction, precipitation, relative humidity, character of day—as to sunshine and other meteorological phenomena—and the following deductions in this paper are made from those records:

The mean summer temperature is 70°. The mean winter temperature is 30°. The mean yearly temperature is 51.80°. For comparison I may add that the mean yearly temperature of the entire State is 45°; Nantucket, 49.5°; New York City, 52°, and Atlantic City, 52.7°. The annual range of temperature of Long Island is 39°, while the annual range for the whole country is from 64°

to 77°. It is least at the eastern and increases toward the western end of the island. The average temperature of the island for the month of July is 3° warmer than Nantucket, and for January 3° cooler, but there is a difference in relative humidity of 7¾ per cent. in favor of Long Island, and the difference in the thermometric readings is practically obliterated because of the drier atmosphere. The temperature of Suffolk County, the eastern portion of the island, averages in summer 5° cooler than New York City. The temperature of this portion of the island in summer is almost the same as that of northern New York and New England, while its temperature in winter is about that of Central New Jersey.

The winter temperature of Suffolk County is higher by 15° than the rest of New York State. The difference is undoubtedly due to the modifying effect of the ocean, giving heat during the winter, and coolness during the summer. When the winds are from the south or southwest the eastern and southern portion of Long Island may be affected by the influence of the Gulf Stream, which, having a yearly temperature of 73°, can communicate to the coast heat sufficient to modify the climate.

Dr. E. T. Turner, Meteorologist to the New York Weather Bureau, says that the nearest approach to a maritime climate along the coast is eastern Long Island. One noticeable feature of this is the retardation of the seasons, amounting to nearly three weeks. The change from one to another is gradual, a valuable feature for the debilitated; for the more gradual the change from season to season the less injurious is the effect. The time of the first killing frost is fully three weeks later on the eastern end than on the western end of the island.

## *Humidity.*

One of the most striking features of the climate is its low relative humidity, especially in the pine region. It is lowest in winter and spring—during the cold months—the reverse of that which occurs inland. This peculiarity is due to the more moderate heat and cold of the island, and to the southwesterly winds in summer.

The average yearly humidity is 72.75 per cent., while Atlantic City is 80.5 per cent.; Block Island, 84.5 per cent.; Nantucket, 80.5 per cent. San Diego, Cal., is 69½ per cent., only 3 per cent. lower than that of Long Island. The entire State of New York is 75.5 per cent. The influence of a low relative humidity for

those seeking relief from chronic inflammatory troubles should be given considerable prominence.

### *Sunshine.*

Probably the most valuable feature of any climate is the amount of sunshine. Its general tonic effect leads to an increased vitality. The amount of sunshine on Long Island is greatest in the pine forest region at the eastern end and southern shore. The average number of clear days is 72 more than New York City, 90 more than Nantucket, and 120 more than the western part of the State.

Including all days in which the sun shines all day, or a part of the day, sufficient to permit exercise in the open air, the eastern half of the island has an average of 300 days, forty more than Atlantic City, sixty more than Narragansett Pier, 104 more than Nantucket, only twelve less than Denver, and 30 less than Phœnix, Arizona; El Paso, Texas, and Los Angeles, Cal.

Long Island, in a surprising way, ranks high among other places having a wide reputation in this feature of climate—which has, perhaps, the greatest influence of all upon the invalid.

### *Wind Direction.*

The influence of the wind direction upon the climate of the island is only understood when we realize that Long Island is really far out at sea, in position approaching a right angle to the mainland. It is so placed that it has 140 miles of longitude, and only 37 miles of latitude. (Trask.) The wind direction in summer is from the south and southwest, from off the Atlantic Ocean. The whole length of the island meets it at nearly a right angle, and as the heated air arises, the breeze, cooled by a large expanse of pure water, blows in to take its place. It commonly penetrates inland eight or ten miles through the whole evergreen forest region, or until it meets the central hills. This is the prevailing condition for six months of the year. In winter the prevailing wind is from the northwest, and produces a continental type of climate, but often there are considerable periods when the wind direction is from the southwest, and Long Island again enjoys the tempering effect of the ocean.

### *Pine Forest.*

The pine forest of the island occupies the portion between the central range of hills and the south shore, six to eight miles in

width, and extends for sixty miles through the whole length of Suffolk County. The trees are nearly all of the yellow pitch pine variety. There is no other evergreen forest of equal size in the State of New York, short of the Adirondacks. (Winfield.) Evergreens are indigenous in all this region. Any cultivated spot abandoned a few years springs up in a thick growth of pines. The whole region is filled with a balsamic odor very noticeable to one not accustomed to living here. The soil, as in all pine-wood regions, is very sandy, insuring dryness and excellent drainage. The belief in the favorable influence of the pines in pulmonary and other affections, and in convalescence from all acute diseases, is general among physicians.

The late Dr. A. L. Loomis, in an article on "Evergreen Forests as a Therapeutic Agent in Pulmonary Phthisis," says that aseptic air has a less powerful curative effect upon suppurative processes than air in which the aseptic condition is due to the persistent presence of some antiseptic agent of sufficient power to destroy existing septic germs.

Evergreen forests have a powerful purifying effect upon the surrounding atmosphere, rendering it antiseptic by the chemical combinations which are going on in them.

The clinical evidence of the beneficial effect of pine forests on phthisical subjects is unquestionable. The changes attributable to the persistent inhalation of air impregnated with the emanations of such forests are such as to indicate that the atmosphere is not only aseptic, but antiseptic—made antiseptic by some element which is not only fatal to germ life, but at the same time is stimulant and tonic to normal physiological processes within the the lung. This element Dr. Loomis believed to be the peroxide of hydrogen formed by the atmospheric oxydation of turpentine vapors.

Adding to the effect of the pine forest the aseptic ocean air which for more than six months of the year is carried through the entire pine region—making, in addition, the temperature cool and more equable—the sandy soil, the effect of the low relative humidity, the large amount of sunshine, Long Island presents climatic features in its pine-forest region not surpassed by any place along the Atlantic coast.

The therapeutic elements desired in a climate are pure air, with freedom from organic and inorganic material, and without excessive dampness; an abundance of sunshine; a sandy soil, and an equable temperature. All these Long Island possesses, and in

addition, the antiseptic elements in the emanations from its pine forest, and the bromine and iodine in its ocean air. Man is essentially modified in his vitality by the influence of climate. Those who live in a good climate possess greater longevity and present greater resistance to disease. Dr. Winfield, of Brooklyn, says that a physician of national reputation once observed that the two healthiest counties in the United States were Suffolk County, L. I., and Berkshire County, Mass. The mortality statistics of Long Island prove its claim to climatic superiority, as evidenced in the longevity of its inhabitants. In my own township in the year 1903 there were 141 deaths from all causes—including infancy. Of these 11 per cent. were between 80 and 100 years: the average age of the 11 per cent. was 86 years. From published reports in Suffolk County during the fiscal year ending July 1, 1891, there were 770 deaths, the average age being 62 years: 526 of the 770 were between 70 and 90 years, and 17 were between 90 and 100 years.

From published records in the years 1885-86-87 there were 3,935 deaths in all of Long Island of those over 20 years of age: 1,394 of them were between 70 and 90 years; 642 between 80 and 100 years; 111 between 90 and 100, and 4 over 100. This is a remarkable showing. I am not aware that it is equaled by any other place in the country.

The climate of Long Island is favorable because of its low altitude in increasing functional activity of circulatory organs; in convalescence from acute diseases, and in surgical diseases to acclerate tissue change; for all invalids who cannot bear great changes of temperature; for pulmonary tuberculosis, because of its pure air, equable temperature and evergreen forest; for neurasthenia, nerve exhaustion and allied nervous troubles requiring relaxation, because of its strikingly sedative qualities, and particularly valuable in insomnia due to nervousness. People who come to central and eastern Long Island are always surprised at first at the increased amount of sleep induced. The atmosphere is always described by one experiencing it for the first time as invigorating and quieting. Among native Long Islanders tuberculosis is one of the rarest diseases, rheumatism is scarcely more frequently met, malaria does not exist except in some sections at the western end.

When Long Island is fully understood, and medical men become familiar with its natural conditions, its sandy soil, favoring sanitation and modifying heat and moisture; its equable and rela-

tively cool climate tempered by the aseptic and antiseptic ocean air, and influenced by the antiseptic emanations of its pine forest; its low relative humidity; its large amount of sunshine; its pure water supply—that it is the only considerable portion of the Atlantic coast entirely surrounded by water—that it is a pier with all these natural advantages extending one hundred miles into the Atlantic Ocean and attached to the greatest city in America; when medical men become familiar with all this, Long Island will reach its manifest destiny, and become one great health resort.

## AN ATMOSPHERIC EDDY.

It was several years ago discovered, and subsequently confirmed by the United States Weather Bureau, that a belt some 200 miles wide lies between the Piedmont Plateau and the ocean, in North Carolina, and approximately within the 76th and 80th meridians, which is but little affected by violent atmospheric pressures. It is in an almost constant state of quiescence, the air currents seldom exceeding a breeze lusty enough to detach dead limbs from superannuated trees. The storms which sweep up from the Caribbean Sea in the hurricane months give it but a comparatively mild shock, while the cyclones which hurtle from the Rocky Mountain areas leave it practically immune. Just as eddies form in the bends of sinuous water-courses, so an atmospheric eddy forms in the elbow of Cape Hatteras. Precipitation of rain and snow is ample, but never excessive; the temperature is modified by cooling intervals; purest of water flows from the foot hills; sub-tropical vegetation—the palmetto and cactus—hob-nob with the boreal junipers and pines. Sanitarians have hastened to utilize these climatic advantages in the interest of invalids and patients, and more than one Pinehurst spreads out its beneficence over favored locations of this peculiar area. A recent statement declared that these resorts cannot accommodate one-half the annual applicants.

Combining all these sanitary advantages, and supplemented by most charming environment of woods, hills and water spaces, Fayetteville, in Cumberland County, stands conspicuous and ever attractive. It is on the direct railway thoroughfare between Florida and northern cities, and makes a delightful half-way house

for such as elect to tarry on their way. For thirteen years I have made some portion of this phenomenal atmospheric eddy my place of winter residence, after testing all the resorts between Norfolk and the Rio Grande, with comparison in favor, all told, of Fayetteville. My temperature record for the month of January, systematically kept, shows fifteen days clear, seven cloudy and nine partly clear, with an average day temperature of 42 degrees. Nights are apt to be cold, with the mercury frequently at freezing point, but this does not interfere with lettuce and jonquil culture, under cloth. Fluctuations are most variable. For example, on January 2d the thermometer on a northern exposure showed 60 degrees, and on a southern exposure, 70 degrees. Peep frogs were heard that day, and sweet-gum buds were as large as pecan nuts. On the 10th the mercury showed 10 degrees for a minimum; on the 22d, 65 degrees as a maximum. Four consecutive days, 28th to 31st, showed snow and sleet, which two succeeding warm days carried away. On February 4th jonquils in gardens seemed ready to bloom, but were retarded by a succeeding cold spell, lasting five days, with a minimum temperature of 24 degrees and a maximum of 42 degrees. One intervening day showed 65 degrees. Up to the 12th we had five days clear, and seven partly clear. The ground-hog disclaims all responsibility.

CHARLES HALLOCK, M. A., *Observer.*

---

## THE PREVENTION OF TUBERCULOSIS.*

By WILLIAM TIBBLES, LL.D., M.D., L.R.C.P., M.R.C.S., L.G.A.,
Medical Officer of Health, Nottingham, England.

Phthisical people about to marry should be warned of the risk that their offspring may develop the disease. Even if the individuals themselves be free from the disease, their children may develop it, if the stock be phthisical. Scrofulous, tuberculous and superannuated people ought not to be married, or should not, at any rate, become progenitors; healthy, vigorous individuals should not marry cousins or their near relatives; all such alliances

*Written for and Reprinted from "The Detroit Medical Journal," January, 1904.

are likely to end in the production of children of the scrofulous or tubercular diathesis, with a strong tendency for the development of consumption.

Children born of phthisical parents should be subjected to the same rules of life as a person who exhibits the early signs of the disease, so far as they can be enforced. This is the means of eradicating the inherited tendency to the disease; by fitting their tissues to resist the invasion by *bacilli tuberculosis;* or, rather unfitting them for the development therein of these bacilli.

Tuberculous mothers should not suckle their young; nor should their children be brought up by hand, if this can be avoided. The best means of fitting the infant for resisting the disease in its many forms, for warding off marasmus, tubercular meningitis, struma, scrofula, and diseases of the bones and joints, is to provide it with a good wet-nurse. The practice of providing motherless infants, or the infant of a delicate woman, with a wet-nurse has fallen into desuetude, as other modes of feeding have become fashionable. This is unfortunate, for thousands of children now die or become the subjects of tuberculous diseases, owing to their being bottle-fed, who might escape these troubles if they had the milk of a good healthy woman. The practice is old-fashioned and there are some arguments against it; but the greatest and most persuasive argument with most people is its expense. A wet-nurse should be subjected to a medical examination; she must not be of a phthisical family, nor have any taint of this or any other constitutional or communicable disease.

If the child must be fed by hand, it should have the fresh milk of the cow, goat, ewe or ass, modified to approximate mothers' milk chemically. From six to twelve months of age, the child may have, in addition to milk, a little beef-tea or clear soup, egg or custard; or some of the milk may be thickened with one of the patent foods, or with baked flour, arrowroot or bread. From one to two years of age, porridge should be given for breakfast; the juice of meat, gravy, or clear soup for dinner, the rest of the food consisting of milk and milky foods. After teething is over, the child may have a little finely cut meat once or twice a day, and some bread and butter in addition to the other articles. Milk must still be given liberally for a long time, and the amount the child takes at meals should be mostly drunk first; after this, he may have as much bread and butter or potato, meat, or gravy, as he reasonably wants. The child's bread should not be soaked in milk or gravy; he should chew it so that it may be intimately

mixed with the saliva, whereby its starchy ingredients are converted into sugar, and more easily digested. But milk may be given freely while the child is eating bread, between each mouthful or two, for more will be drunk so than otherwise.

*In childhood,* the disease is promoted by every condition incompatible with health to which the system is exposed. The body must therefore be fortified against it by good food and hygienic management. In this period the diet should consist of plenty of meat, soup, eggs and milk, with a fair amount of bread, potato and farinaceous puddings; potatoes should not be taken to the exclusion of other things, but in moderation they are valuable for their starch, and the salts which give them their anti-scorbutic properties. Oatmeal and lentils are valuable, as in addition to their proteid and carbohydrate elements, they are rich in iron and phosphates. It often happens as soon as a child shows signs of tubercular glands, or other such trouble, he is deprived of all bread and potato and dosed freely with cod-liver oil, as though the latter could entirely replace the former, to the patient's great and lasting benefit. Bread and potatoes are not the cause of the deterioration of the organism, nor should they be stopped from the dietary, except in so far as they are replaced by meat, milk, eggs and other nitrogenous foods. It was formerly thought that a diet of bread and potatoes favors the development of the tubercle; and perhaps they do, but only because the diet contains an insufficiency of proteid material; therefore, do not cut them off entirely, but add more nitrogenous food to the diet, as already indicated.

The importance of an abundance of fresh air and muscular exercise for children cannot be too much impressed on parents as preventive measures; it is useless to modify the diet and dose the child with cod-liver oil, if, at the same time, it is allowed to sit all day long in a close room or crowded schoolroom. The schoolroom must be well ventilated, the school hours not too long, and long evening studies must not be allowed. There must be plenty of out-door exercise in gymnastics, or at least with hoop, skipping-rope or shuttlecock and battledore. The great mischief is that girls give up their exercise too early in life; almost before puberty comes upon them they consider it unwomanly to exercise in this manner; but, as they become too old for their childish games, they must be encouraged to continue to exercise in the open air by a reasonable amount of hockey, tennis, cricket, cycling or riding, along with their brothers, to whom this exercise is

equally a necessity. Indeed, to be successful in our object we must definitely prescribe the amount of food and drink, the number of hours to be allotted to lessons, to play and exercise, and to sleep.

There is no remedy which has so well-established a reputation as cod-liver oil, both in the prevention and treatment of phthisis; and there is no remedy which has been more abused. It must be remembered that it is not *every child* of tubercular habit or phthisical descent which is benefited by cod-liver oil. Physicians are taught by daily experience that instances occur in which a child having a bunch of enlarged glands, and a scrofulous appearance, derives no benefit whatever from it, but is made worse owing to gastric digestion having been upset, and to that distaste for fat which is so often the harbinger of phthisis. As a general rule, the child which is thick-set, plump, clumsy, lethargic or of slow mental activity is not benefited by it, even though there are enlarged glands and other signs of deterioration of the organism. But the children most benefited by it are those who are dark-haired, thin and slender, with a delicate skin which shows the veins meandering beneath it, and a general ethereal appearance; usually they have an acclerated pulse, are quick, sharp, of great mental activity and excitable nature; these are the children that require cod-liver oil and derive great improvement from it. To them it must be administered for months to get really good results; the dose should be small at the beginning and gradually increased to three or four teaspoonfuls daily. The disgust for the oil is soon overcome; children cease to fight against it, and even ask for their customary dose. It is advisable to leave it off now and then for a week or so, otherwise we may induce an unconquerable aversion to it. There are various emulsions, and mixtures with malt extract, which are more palatable than the plain oil; some of these are especially useful; but it must not be overlooked that the oil is diluted to the extent of the articles mixed with it, and therefore a larger dose must be given.

*Baths* are very beneficial in these cases, and it so happens that the children who cannot take the cod-liver oil with advantage are the very ones who are the most benefited by bathing, and *vice versa*. Ordinary plain baths have cured many cases of struma and considerably improved the tone of children with tubercular tendencies; but the medicated water baths, such as sea-water, brine-baths, bromo-iodine and sulphurous waters, are better. Such baths are really valuable in these cases, and the waters con-

taining these elements are justly esteemed as alteratives and promoters of metabolism; indeed, they enjoy a reputation as great as that of cod-liver oil, both for internal and external use. Where circumstances do not admit of removal to the source of the water, brine-baths and seabaths can be used at home. The bath may be taken at almost any temperature between 60° to 64° (cold baths) and 100° (hot baths); but from personal experience I consider that nearly cold bathing does the most good.

Phthisical persons, and those of strong phthisical tendencies, should not marry. Phthisical persons should not occupy the same bed or bedroom with a healthy person. There are very strong grounds for belief that this disease is thus transmitted from husband to wife, and that those who continually nurse tuberculous patients sometimes become infected. Simple contact or occasionally visiting such patients is devoid of danger, as is shown by the daily experience of medical men, especially of the resident medical men and nurses in hospitals devoted to the treatment of the disease.

A predisposition to consumption was formerly believed to be shown by certain characteristics of the diathesis, of which there are two types:—(a) The dark, beautiful person, of sharp mental activity, nervous and usually thin—the tubercular type; and (b) The fair, coarse-skinned, muddy-looking individual, rather fat, clumsy, and of slow mental activity—the scrofulous type. Undoubtedly these types represent a delicate organization of the body, with tissues little able to resist the invasion of the *bacilli tuberculosis,* but a large number of phthisical people could not be classed with either of these groups.

Persons of known phthisical tendency or parentage should be especially protected from the precursors of the disease, which have so often been observed in these cases, and may be called the predisposing causes. Among these we have to reckon:

(a). *Wet and Damp.* Such individuals must avoid frequent exposure to wet and damp, which lowers the vitality and predisposes to many diseases. It is especially a combination of cold and damp that is the worst. There is an undue proportion of deaths from phthisis among people who live on damp, or imperfectly drained or made-up soil. Where a choice of site is possible, delicate individuals must live in a good, healthy district, with healthy surroundings and all sanitary conveniences. It is believed that a sub-soil of sand or gravel is the driest and therefore

the healthiest, and this is true, in the main. The situation must therefore be elevated and on a gentle slope, to favor natural drainage, both in surface and in sub-soil. Clay sub-soil makes the house cold and damp by retaining dampness; chalk, on the other hand, is usually dry, but cold because it does not absorb much heat; and made-ground must be avoided always.

There is a common belief that repeated colds are a cause of phthisis. The fact is that many persons with a predisposition to phthisis are frequently the subjects of catarrh. It is therefore highly important that such persons should avoid "catching cold." There is little doubt that a prolonged bronchial catarrh, a catarrhal pneumonia, whooping-cough or even measles will lower the resistance of the lungs, and so lead with other favoring conditions to the deposition of tubercles.

(b). *Deficiency of Animal Food.* An absence of a due proportion of meat from the diet is one of the most prolific sources of ill-health, and in combination with over-work, worry, and other such things, is a frequent predisposing cause of phthisis. On the other hand, high feeding is a grand means of fortifying the system against the invasion by it of the *bacillus tuberculosis.* In a person of phthisical stock or even with a known tendency to phthisis, the feeding should be carried out on the lines indicated upon feeding in consumption which follow.

(c). *The purity of the surrounding air* is a matter of nearly as great importance as the food. Overcrowding, working in close and ill-ventilated rooms, or with the fumes of gas, etc., frequently co-operates with the foregoing as a cause of phthisis. The dust arising from the material in the workroom may produce the bronchial catarrh or the catarrhal pneumonia which is the forerunner of phthisis. In many trade-processes, gases of an injurious character are evolved and escape into the air which must be breathed by the workpeople engaged therein; but the vast majority of trades are injurious or otherwise in proportion to the amount and kind of dust produced. The long-continued inhalation of dust produces diseases of the respiratory organs, especially bronchitis and emphysema, interstitial pneumonia and fibroid phthisis. A table showing the mortality from all causes among males engaged in dusty occupations in England and Wales may be taken at 1,000; of this, 200 are due to tubercular consumption and 182 to other diseases of the lungs. This can be taken as a proof that pure air, well-ventilated rooms and plenty

of space are as necessary as good food; and that the avoidance of impure air, bad ventilation and overcrowding are all-important in the prevention of disease. Besides this, the bacilli of the disease have been obtained from the floors and walls, both of houses and workshops, occupied by consumptive people; these must, therefore, be inhaled with the dust.

(d). *Exhausting discharges,* prolonged suckling of infants and frequent child-bearing are among the well-known precursors of consumption among women, and most certainly require attention.

(e). *Any condition which lowers vitality* predisposes to consumption, and renders a delicate person liable to its invasion; among these we must reckon excessive indulgence in alcohol, sexual excess, syphilis, and all other exhausting diseases.

(f). *The milk of cows* for domestic purposes should be boiled. It is an animal food, and for that reason alone it ought to be cooked, but this is also necessary for protection against any chance infection by many diseases; for there are several which can be transmitted to human beings, and it is believed that among them we must reckon bovine tuberculosis. Stall-fed cows are very susceptible to tubercle. It is stated that 25 per cent. of cows kept in town are the subjects of this disease, and even the best bred are liable to it. The milk may not contain it in the glands; but there may be ulcers upon the udders, the discharge from which, laden with bacilli, becomes disseminated in the milk. It is argued that if cow's milk causes tuberculosis in human beings, the disease ought to commence in the bowels rather than in the lungs. Probably a large proportion of the cases of tubercle of the abdominal glands (*Tabes mesenterica*) are due to this cause; but it does not follow that the abdomen must always be the primary seat of the disease, when the infection arises from milk. The disease may begin in the abdomen, brain or lungs, or, avoiding these, the primary seat may be in a bone or joint. *It still remains to be proven that the milk of tuberculous cows does not cause tuberculosis in human beings.* The bacilli in man and cow are identical in appearance, and it has been clearly proved that rabbits, dogs, guinea-pigs, etc., fed with tuberculous cows' milk will become tubercular, and if the disease is thus transmitted in animals, why not in children? Indeed, there is strong evidence that it is so transmissible; and further support to this idea is given by the fact that the percentage of children under five years of age

who die from tubercular meningitis, ulceration of the bowels and tabes mesenterica is very high.

(g). *The pet animals* of children—guinea-pigs, young dogs and kittens, white mice, rabbits, etc., are prone to such diseases, and may possibly communicate tubercle to their friends, the children who play with them; therefore, all weakly or sickly animals of this class ought to be destroyed without reserve.

(h). *The flesh of animals* is capable of transmitting certain diseases to man, including phthisis and tubercle; and although these diseases arise more commonly in other ways, it must not be forgotten that such transmission is possible, and that such an origin would be far more common, were it not for precautions taken to prevent the sale of unsound meat, and the additional safeguard in thoroughly cooking all kinds of animal food.

(i). *Not the least danger of infection arises from a person suffering with the disease,* and certain precautions are necessary to prevent his spreading the disease to others. The researches of science show that the patient's breath does not contain the bacilli, but that the phlegm or sputum may be loaded with them. If the patient spits upon the floor anywhere and the sputum is allowed to become dry, particles of dust are formed which float about in the air and carry germs with them, so that the air of a room or other place may become sufficiently impregnated as to be positively dangerous to a healthy person, to say nothing of one who has a predisposition to the disease. The floors, walls and furniture of rooms occupied by phthisical patients become infected by germs; indeed, the bacilli have been collected from such sources and experimental inoculation of animals has produced the disease in them. Such experiments explain the frequent occurrence of the disease in a particular house, among the employees of a particular warehouse, manufactory, barracks, or public institution. From these conditions we learn the following means of preventing the spreading of this disease:

*Let Proper Care Be Taken of the Sputa.* Just as a consumptive must not swallow his phlegm, because it might be the means of spreading the disease to other organs in his body, so must he be careful not to be the means of distributing the disease to other people by it. Proper spit-boxes, spittoons or cuspidors must be used; they should contain a 5 per cent. solution of carbolic acid or other similar disinfectant. They should be capable of further disinfection by boiling or cleansing with a solution of bichloride

of mercury. The patient must avoid spitting except into such receptacles as are described, or small pieces of rag or paper containing disinfectants.

*The rooms* used by a consumptive must be thoroughly ventilated. There is little doubt that frequent changing of air dilutes the poison, diminishes the number of germs and minimizes the risk of infection from this source.

*The clothing,* especially the underclothing and the bed-linen, of the patient should be boiled, or at any rate scalded, when being washed.

*Thoroughly cleansing the rooms* occupied by the patient is also of importance; so that an occasional "spring cleaning" is imperative, disinfectants being used in the process. When a person has died from this disease, the rooms must be disinfected with sulphur or formalin; the paper should be stripped off the walls and burned; the ceilings and cornices must be limewashed, and all wood-work, including floors, should be washed in a solution of carbolic acid, or with carbolic soap.

*Pre-phthisis.* In all these cases of consumption there is a stage which may be called *pre-phthisis,* in which, before the deposition of tubercle in the organs, there are signs of deficiency and weakness, with some deterioration of the blood, due to anæmia. In these patients, a course of ferruginous preparations and waters is strongly advised. Such persons must exercise unusual care to avoid all risks of "catching cold," by wearing flannel next the skin. Sudden chilling of the skin is not followed by sickness in all cases, but undoubted examples occur to all physicians, in which the signs of consumption made their appearance at no very long date after a severe chilling or unusual wetting of the skin. One must be quite sure that the catarrhal products in pneumonia are quite dried up, or pleurisy quite cured, before the patient is allowed to return to business, to school, or even to take exercise in the open air. In such conditions the inflammatory products frequently become degenerated and form an exceedingly suitable nidus for the growth of the tubercle bacillus.

*Rest and Change of Air.* In the stage of pre-phthisis and in the early stage of consumption, patients who have the means ought, above all things, to throw up their positions in counting-house, office, or warehouse, to avoid the overheated, dust-laden atmosphere, even to avoid heated and tobacco-laden club rooms. For, though the exposure of a person with a delicate chest to these

bad influences may prove injurious to a weak lung and end in consumption, the disease is often promptly arrested and brought to a favorable issue by their careful avoidance. The patient must remove to a district with pure air; avoid work and worry, and lead a quiet life, the beneficial effect of change of air being equally marked in the working classes. The object is to obtain a pure, bracing air for many hours daily, without the risk of "catching cold," and without undue strain on the lungs. This may be obtained by a sea voyage of long duration; residence in certain districts of Colorado, California, the Cape of Good Hope, or New Zealand, or at high altitudes in the Alps of Switzerland. The place should be chosen according to the time of the year, one place being better for summer and another for winter. In less favorable climates there are many especially constructed sanatoria, in which an out-door life is adopted; in this open-air treatment, the patients live as much as possible in verandahs or summerhouses, open to the air, but so constructed that the patients can be protected from wind or wet; this treatment has been especially marked with success in cases of non-feverish phthisis, in combination with overfeeding.

*Want of appetite, indigestion, nausea and vomiting* are unpleasant symptoms of common occurrence in these early cases and during the course of phthisis; indeed, a catarrh of the stomach, with a distaste for fatty food and a very capricious appetite, are marks of the individual of strumous or tuberculous type, even before physical signs of the disease appear. Due attention must therefore be paid to it; the stomach must be coaxed, indulged to some extent, and medicines given to aid its recovery, promote appetite and encourage the alimentary secretions.

*Loss of Flesh and Strength is the Rule.* Emaciation is one of the earliest symptoms and may be taken as a note of warning, when a cough of unusual duration has been thought to be due to a simple catarrh, or to be of pharyngeal or gastric origin. This sign must be met by overfeeding. These patients require the richest diet that will agree with them. All food is proper that contains fat or fat-generating and flesh-forming elements; therefore *milk* cannot be taken too abundantly. From four to eight pints a day may be taken. The milk of animals which feed on mountain pastures, as that of ewes or goats, is richer in flesh and fat-forming substances than cow's milk, and is therefore commendable as a *milk cure* when patients are within reach of it; but when patients cannot travel to obtain it, they must carry out

the milk-cure at home, with cow's milk. *Plenty of animal food* is required, as beef, mutton, lamb, *liver, spleen, sweetbread and kidneys,* fat ham and bacon, game, poultry and eggs. Most kinds of *fish* may be taken, and oysters, either raw or cooked, also *soups* of beef, mutton, chicken or game, which may advantageously be thickened with rye-meal, lentils, pea-flour, bean-meal, barley-meal or rice, and flavored with tomato, celery, onion, etc.; and all kinds of meat essences are valuable.

*Puddings,* mostly of milk, eggs, with farinaceous substances like oatmeal, hominy, rice, sago, tapioca, vermicelli, macaroni; custards, jellies, trifle, cream.

*Vegetables:* Potato, cabbage, spinach, onions, asparagus, celery, water-cress, lettuce, tomato, beet, parsnip. *Fruit:* Grapes, which contain 25 per cent. of sugar; strawberries, apples, dates, prunes, figs, bananas, melons, and all sweet fruits. *The drink* should be chiefly of fresh milk alone, or with tea, coffee, chocolate, buttermilk, whey; pure water; bitter ale or stout, Bordeaux, Burgundy, wines containing iron, and all sweet wines. Stimulants are not vitally necessary in early cases, and must by no means be allowed to upset digestion. There must be four good meals a day, about four hours apart; the patient should also have milk, milk and raw egg, or custard at least once between the meals, and in the night, if the patient awakes. We must insist that the food is as rich as possible in nutriment, and yet as plain in the cooking as is compatible therewith, easy of digestion and abundant. Fats and carbohydrates are as important as proteid food. Whole wheat bread is better than white, if it does not irritate the stomach. Oatmeal and maize are valuable, as they contain much fat; lentils, much phosphates and iron; bean or peameal, much albumin; and all green portions of plants, which contain iron and valuable salts. Milk contains all the elements required in the body, but is deficient in iron. Cream can be taken by many persons who are unable to take cod-liver oil; it can be given abundantly in tea or coffee, with fruit, or added to other milk, or made palatable by the addition of a teaspoonful of brandy or sal volatile. Milk can also be increased in fat by boiling finely shredded *suet* in it. Other persons who object to fat meat may be able to take a larger quantity of butter, which contains the same fatty acids as beef and mutton fat, but less of *stearin* and more of *olein;* it appears to be the stearoptene or stearin in meat which is objectionable to patients. Clotted cream or cream cheese are nearly the same as

butter, consisting mainly of condensed cream. *Cod-liver oil* consists chiefly of *olein,* the liquid fat, together with some margarine, palmitin and stearin, and about 5 per cent. of *free acids* which aid in the digestion of the others. Cod-liver oil is commendable as a fat which is easily digested by patients, and is a valuable alterative by virtue of traces of iodine and bromine which it contains; but we must not impress ourselves with the idea that it *cannot be done without;* it increases the richness of the chyle, improves the quality of the blood, but differs from almond or olive oil only in its free acids and salts, and in containing less palmitin and stearin than the fat of butter and meat. We must ascertain that our patients can digest cod-liver oil, and it is contraindicated in gastric catarrh, diarrhea or hæmoptysis; for its alterative effect it must be taken for months together, and this effect is quite secondary to its action as a food.

Another important matter is the digestion of carbo-hydrate food. In many cases the secretions are defective in amylolytic ferments, and in consequence amylaceous foods, starches in particular, are but feebly acted upon. There is no more suitable remedy for this trouble than *extract of malt.* This consists of malt sugar, with some dextrine, albumin and the soluble phosphates of the barley; it is both directly and indirectly nutritive. The sugar or maltose does not give rise to acidity and dyspepsia, like sweets containing cane-sugar; its albuminous constituents are flesh-forming, its phosphates and salts enrich the blood; but above all, it contains among its albuminoids an active ferment, *diastase,* which acts powerfully upon starch in bread and other foods, and converts it into sugar—good specimens of the extract will convert several times their bulk of starch into sugar. Diastase is most active in an alkaline medium; it is therefore better that the extract be mixed in some warm gruel or other farinaceous food, and given just before a meal, or that it be not given until about two hours after the meal, when the acid of the stomach is becoming exhausted. It is often made the vehicle for administering cod-liver oil.

*Exercise* in the open air must be enjoined in all these cases, care being taken to stop short of fatigue. Probably *walking* is the best; the respiratory and cardiac activity, as well as that of the general muscular system, is increased by it. Riding and cycling may be indulged in; breathing exercises and singing are valuable to a certain degree, as are also gymnastic exercises for the development of the chest. Moderation must be strongly urged, and everything

in the way of a strain must be avoided; great efforts in running, cycling, riding, dancing and singing are equally debarred, or we shall surely produce an attack of hæmoptysis, bronchial catarrh or such a physical exhaustion as is a prelude to the deposition or extension of tubercle.

*The Anæmia.* Oxygen is necessary for life, and the red corpuscle is the element that carries it all over the body. The less oxygen in the blood, the more powerful are the demands for greater activity in the lungs, hence quickened breathing and dyspnœa. Anæmia is the rule from the earliest stages of tuberculosis, and is due to loss of nutrition. The skin becomes pale and waxy-looking, the mucous membranes pale, the conjunctiva of a pearly lustre; the breathing is quick and more or less difficult on exertion, and there is palpitation, with spots before the eyes, ringing in the ears, or faintness. Amenorrhea is not uncommon. The treatment is largely by animal food, *red* meat, raw meat-juice, red marrow and its preparations, defibrinated blood, spleen-pulp, liver, eggs raw and cooked; oatmeal and lentils, for their iron and phosphates; green vegetables, for their iron-bearing chlorophyll and their salts. It is useless to attempt to *force* the menses; but such drugs as iron, myrrh and aloes, which act very largely by improving the blood and general nutrition, and keeping the bowels clear, may bring about the desired period.

*Pyrexia* may or may not be present from early days; its presence or absence bears some relation to the activity or otherwise of the disease. When it occurs only occasionally, a few days' rest in bed until it has subsided is the best treatment, or combined with quinine and an acid. Such patients are not the best for *open-air treatment,* nor do they stand long journeys, even for their health, very well. Pyrexial cases must not be exposed to all weathers, for they run the greatest risk of catarrh and consequent invasion of fresh tissue during the attack.

The mental condition of these patients is usually one of great hopefulness or great confidence in their power of recuperation; even when very ill in bed, they believe in their speedy recovery if only they could get rid of their cough.

Finally, our chief reliance is upon the improvement of the body and its tissues in every possible way, so that it may be enabled to resist the inroads of the disease. This indication is best met by pure air, perfect hygienic surroundings, sufficient exercise and abundance of good food.

Nottingham, England.

# DIETETIC TREATMENT OF CHRONIC NEPHRITIS.*

By VICTOR C. VAUGHAN, M.D., Ann Harbor, Mich.

The most reasonable hope of doing this lies in making a radical change in the proteids of the food.

Before going into this, however, I wish to make some brief statements concerning the employment of medicinal agents in chronic nephritis. I am led to do this for fear that it may be thought that I would discard all drugs as valueless, and this is far from my opinion. No one of experience can deny the value of digitalis in passive hyperemia of the kidney due to disease of the heart, and which is often accompanied by albuminuria and more or less extensive dropsy. Indeed, these are the cases of so-called Bright's disease that are so satisfactorily treated by the proper administration of heart tonics, the best of which, so far as these cases are concerned, is, in my experience, digitalis. Neither can one of experience deny that great and more or less lasting good is secured by the administration of hydragogue cathartics, such as elaterium. Under the proper employment of this drug and the subsequent use of heart tonics, I have seen extensive edemas of the lower extremities wholly disappear, and the patient able to return to his work and continue at it for years. Furthermore, the value of mercury in syphilitic diseases of the kidney and the benefit of quinine in malarial nephritis cannot be questioned. We must always strive in the treatment of any disease to find the causative agent, and direct our treatment accordingly. It is true that we may empirically discover a cure while the cause remains unknown, as has happened in the treatment of both malaria and syphilis, but happy hits of this kind are not to be expected to occur with any great frequency. However, just this thing has, if I may express it, partially happened in the dietetic treatment of chronic nephritis, inasmuch as the milk diet in this disease was tried with more or less success long before we knew anything of the differences between the proteids of milk and those of meat.

Clinicians generally recognize the importance of diet in chronic

*Abstract of paper read at meeting of the Washington State Medical Association, Spokane, September, 1903.

nephritis, and much has been written on this subject. Thus, Pel says: "The question, what diet shall we prescribe for our patients with kidney disease, is of great practical importance, because I know of no organic disease in which the manner of life and food so largely influences the course of the disease as in chronic nephritis." And still there is the greatest difference of opinion among these same clinicians when it comes to the point of saying just what foods shall be prohibited and what allowed. It may not be amiss to briefly refer to some of these differences. As a rule there is agreement that a meat diet is harmful, and yet at least one writer recommends an exclusive meat diet, but this is so generally condemned that we may overlook it altogether. Some of our most recent authorities lay but little stress upon the desirability of restricting meat, or omit mention of it altogether. In discussing the treatment of what he calls chronic productive nephritis (intestinal nephritis), Delafield says: "As regards the diet, the quantity of sugars and starches taken should be restricted, and the ingestion of fats encouraged. The use of wine, spirits and tobacco should be discontinued," and this is all he has to say about diet in the treatment of this form of nephritis. Under the head of chronic productive nephritis with exudation (parenchymatous nephritis) he is even more brief, for he contents himself with the following: "For the nephritis the patient should be kept in bed and placed on a fluid diet." Under the treatment of chronic parenchymatous nephritis, Osler gives one sentence to diet, and this reads as follows: "Milk or buttermilk should constitute the chief article of food," and under interstitial nephritis he says: "The diet should be light and nourishing, and the patient should be warned not to eat excessively, and not to take meat more than once a day. Care in food and drink is probably the most important element in the treatment of these early cases."

All have heard of the interdiction of dark meats, but von Noorden claims that the distinction between light and dark meats, so far as they affect the kidney, is a myth. Fish is condemned by Bouchard on the ground that it contains toxins and increases the toxicity of the urine, but is permitted as a substitute for beef by Klemperer, while Pel thinks that we should distinguish between the kinds of fish, and sees no reason for the exclusion of easily digested species from the dietary of the nephritic. Ortner forbids every part of the calf except the sweetbreads and the brain, while Kolisch thinks these the very organs that should be excluded on account of their large nuclein content. There seems

to be a general condemnation of game, even when the flesh of domesticated animals is permitted either with or without restriction. Why the flesh of the quail, grouse or other wild bird should be so much more harmful to the renal cells than that of the barnyard fowl, no one, so far as I know, has attempted to explain. Probably the interdiction of game is due to an unconscious effect of the old theological dogma that whatever man enjoys is bad for him.

The differences of opinion about the placing of eggs on the menu of the chronic nephritic are quite as marked as those concerning meat. Early in his career as a clinician, Senator prohibited eggs because it has been shown that a more or less lasting albuminuria could be induced in experimental animals by the intravenous injection of solutions of egg-albumin, also that a like albuminuria might result in man by swallowing a large number of raw eggs, but in later years he has seen that his conclusions were hardly justified by the data, and now permits that article of diet in moderation. Oertel and others have found the eating of eggs in moderation may be granted to the nephritic.

The exclusive milk diet has been greatly lauded by some, and milk as an important article of food is not only generally permitted, but is prescribed. *"Le regime lacte absolu"* of the French has been probably more frequently prescribed and less frequently followed than any other diet prescribed in chronic Bright's disease. Generally, however, the prescription is given in the words of Dieulafoy, who says: "Follow the milk diet as absolutely as possible." It has been said that a pregnant woman who follows an absolute milk diet for weeks never has eclampsia. As to the truth of this statement, I cannot testify, because I never knew a pregnant woman to follow such a diet, but Pel states that he has known eclampsia to occur when the milk diet had been "very closely" followed. An exclusive milk diet has been in my experience an impossible thing to secure with nephritis, and, moreover, I do not believe that it is the best. Many clinicians have had a like experience so far as the difficulty in carrying out this régime is concerned, and some think that it is harmful in its effects.

On this point Pel makes the following statement: "This exclusive diet is not well borne by many, and disturbances in the functions of the stomach and intestines occur not infrequently. Everyone does not bear it well, and idiosyncrasies are seen. Moreover, we must not forget that on this diet one obtains too much

water, much phosphoric acid, much albumin, and too little iron for the needs of the organism. Not infrequently there is an undesirable increase in adipose tissue, and a decrease in hemoglobin, especially when the individual has a predilection for the accumulation of fat or toward anemia. Three litres of milk contain more than 100 grams of albumin, from which more than 30 grams of urea will be formed, and still we are cautioned against an excess of proteid. Furthermore, I think the amount of phosphoric acid, which varies from three to four grams daily, is harmful to the kidneys. Von Noorden suggests that the phosphoric acid may be partially eliminated by the addition of lime water, which forms an insoluble phosphate, and this is eliminated by the bowels. The deficiency of iron can be made good by the administration of medicinal preparations, but still the large amount of water may be harmful. To many patients with contracted kidneys, and whose blood pressure is high, whose vessels show the well-known changes, and who are already cachectic, the drinking of so much milk is directly harmful, for the blood pressure is further increased, the hydremia is intensified, and the diseased heart still further endangered. Still further, the increased water acts as an unnecessary and undesirable irritant upon the kidney, and especially upon the glomeruli. For these reasons the amount of milk taken daily should be limited to from one to one and one-half litres daily, especially in contracted kidney, and in those cases of parenchymatous nephritis where the amount of urine is small and the anasarca great; in these the dropsy will be increased because the water will not be eliminated, but will accumulate in the subcutaneous tissue." While I do not agree with all the statements in this quotation, I believe that the argument against an exclusive diet is well put. Pel concludes his argument in favor of a mixed diet, and on this point I certainly do not agree with him.

Passing on to the consideration of vegetable foods, we find the same differences among writers. Pel cautions us against those fruits and vegetables that contain benzoic acid, such as plums and green vegetables, but if anyone has shown that the small amount of benzoic acid found in the few plums that a patient would consume at a meal or in a day would be at all harmful, I am not aware of such a demonstration. Asparagus has been condemned, I suppose, because it imparts an odor to the urine. Certainly I know of no other reason for this interdiction. Certain vegetables have been condemned on account of their large potassium content, but as Pel states, it was formerly the custom

to give saltpetre in doses of half an ounce per day without any evidence of harmful action on the kidneys.

The diet which I have found most serviceable in chronic nephritis is, with the exception of cream and butter, wholly vegetables. I forbid meat in any and every form, eggs and milk. As I have already stated, the object which I desire to accomplish is to profoundly alter the proteids in the circulating blood, and both theoretically and clinically I believe that I have the best of reasons for the selection of this diet. The urine for twenty-four hours should be collected and the quantity of albumin in it should be accurately determined, and the result expressed both absolutely and in percentage. At the same time the amount of urea and of total nitrogen should be ascertained. Then the patient should be placed on the diet, and after three days or longer corresponding analyses should be made. The diet permits cream, which should be separated from the milk as completely as possible, and should not contain more than 1 per cent. of proteid, and the amount of cream allowed per day is limited to 500 grams, or one pint. Corn meal mush I prefer among the cereals, and this is allowed ad libitum, and oat meal or cracked wheat may be substituted. Sugar is allowed ad libitum for the mush, and Zwiebach and butter and potatoes complete the substantials of the ration, although I permit the legumins, peas and beans, either fresh or canned, green vegetables, fruits and melons. There is no difficulty in living on such a diet, and after a few weeks patients lose all desire for meat and eggs and wonder why they were formerly so fond of them. That the necessary calories are furnished by this is shown by the following table:

| | Proteid. | Carbohydrate. | Fat. |
|---|---|---|---|
| 500 grams of cream..... | 5 | 27.60 | 150 |
| 200 grams corn meal..... | 20 | 130.60 | 8 |
| 100 grams Zweibach..... | 14 | 60.00 | 24 |
| 50 grams butter..... | .. | ..... | 40 |
| 20 grams sugar..... | .. | 20.00 | .. |
| | 39 | 238.20 | 222 |

This gives 39 grams of proteid, 238.2 grams of carbohydrate and 222 grams of fat. The caloric value of each gram of proteid and carbohydrate is 4.5 and of each gram of fat is 9; therefore

these calories represented in this ration are shown by the following figures:

| | |
|---|---|
| 39+238.2=277.2×4.5= | 1274.4 |
| 222×9 | 1998.0 |
| | 3245.4 |

It will be seen that this ration furnishes more than 3,000 calories, and we have taken no account of fruits and melons. Furthermore, the proteids can be increased by substituting in part legumins for cereals, or by substituting oat meal or wheat for the corn meal. I have had hard-working men live on this diet with ease, and at the same time the amount of albumin in the urine has gradually decreased.

The proper thing to do in order to scientifically demonstrate the value of any diet in chronic nephritis wil be to test the relative toxicity of the blood serum of the patient on animals, with especial reference to its action on the kidneys of the animals, under different diets. This has not been done, but it offers a promising field of research to the young and enthusiastic student of pathology.

I regard the selection of a diet in chronic nephritis quite as important as it is in diabetes, and so far as my experience goes in the management of both of these diseases, diet is the most important thing. The digestive organs of the chronic nephritic need to be watched closely. Lavage of the stomach is often indicated, and an analysis of the gastric juice should be made in all cases. The bowels must be kept in good condition, but copious purgation, except during exacerbations, or for the removal of dropsical accumulations, or in threatened uremia, is not desirable or beneficial. I have already spoken of the value of elaterium and other hydragogues when free catharsis is needed.

The skin should be kept in a normal, but not too active, state. I think that the hot bath is in some cases given too frequently. Of course, one case gives no rules to govern the frequency of the hot bath, because so much depends upon the condition of the patient. As a rule I recommend the hot bath (temperature above 90° F.) two or three times a week, and a Turkish bath once a month. Flannel underclothing, medium to heavy in the winter and light in the summer, is prescribed, but I do not insist, as some do, that the patient should sleep between blankets in hot

weather. Blood counts and hemoglobin estimations furnish evidences that may be of value and should not be neglected.

The only reason that I have for writing this paper lies in what I have said concerning the nature of chronic nephritis, and its dietary treatment. On these points both my study and experience have led me to conclusions that differ from those held by others who have written upon the subject.—"Northwestern Medicine," September, 1903.

---

EQUAL TO THE OCCASION.—Jules Huret, the French journalist, who has announced that Americans make love too coldly, is the son of a rich merchant. M. Huret tells, in the Boston "Post," this story of his father's business acumen:

"My father, years ago, occupied a small shop on the ground floor of a large building. He was then at the beginning of his career, and his income was limited. He was, however, an economical man.

"A clothing firm occupied all of the building except the room held by father, and this firm had arranged with the proprietor that they should have that portion, too, whenever they were ready to pay the rental demanded.

"One day they decided to take in father's shop, and their manager accordingly called on him, and in a friendly way told him he had better look about for another stand at once, since his firm would soon be taking over the shop.

" 'But I don't want to move,' said father.

" 'Well, but you'll have to,' said the manager. 'You are a poor man, and my firm is rich. We can afford to pay three times as much rent for this floor as you can. Now, if you'll leave quietly, without making any fuss, we'll help you to find a new place. But, if you stay, you'll have to pay a rent that will beggar you—simply beggar you, remember.'

" 'Give me,' said father, humbly, 'two weeks to think this matter over.'

"' Well and good,' the manager replied, and two weeks later he called again. Father was all smiles as he received him.

" 'Everything, my friend, is arranged,' father said. 'You may stay here, as before. I don't pay any rent at all, but you pay 2,500 francs a year more than you paid last. I have bought the building.' "

# THE REPORT OF THE COMMITTEE ON HYGIENE.

MEDICAL SOCIETY OF THE STATE OF NEW YORK,
January 26, 1904.*

In reviewing the events which have affected the public health in our State during the past year, your Committee observes that apparently a needless sacrifice of valuable lives has resulted from neglect of well-known methods for the prevention of the spread of acute infectious diseases. Much of the responsibility for this state of things must inevitably be borne by the medical profession of the State. It is not conceivable that physicians practicing their art under the present laws of our State are ignorant of the etiology, the mode of communication, and the methods of preventing the spread of infectious and contagious diseases. If not ignorant themselves it follows that either the profession has been remiss in the exercise of the highest functions of its calling, or that the people, and those who govern them, are not yet sufficiently acquainted with the demonstrated facts of scientific medicine, and are grossly neglectful of their duty. Because your Committee believes that both these factors are active in perpetuating the existing unsatisfactory conditions in the domain of public health, it desires to emphasize once more our duty as guardians of the public health and as instructors of the people in matters of hygiene.

*Typhoid Fever.*—It seems improbable that we will ever have more definite knowledge of the cause and methods for the control of typhoid fever than we have at the present moment. And yet the report of the State Commissioner of Health for 1903 shows that there were nearly 25,000 cases in our State, with a mortality of 1,635 cases. Typhoid fever is most largely communicated by contaminated drinking water. Our intelligent Governor called attention to this in his message of January 6, and referred to the passage, by the last Legislature, of Chapter 464 of the Laws of 1903, entitled, "An Act to Amend the Public Health Law Relating to the Discharge of Sewage and other Waste Matter into the Waters of the State," the enforcement of which is vested in the State Department of Health. It is needless to emphasize the importance of such legislation. It is well known that

*Advance Sheet from Transactions by courtesy of the Secretary.

all our public waters, including the beautiful Adirondack lakes, are infected. To restore them to a condition of purity your Committee recommends that every city and village and house sewering into public waters, which are used as sources of water supply, shall be compelled by law to purify the sewage, by acceptable methods, before it is discharged into public waters. A bill has been introduced by Senator Stewart, of Ithaca, which proposes to place the water supply and sewer systems of the State under the control of a State Board of Sewer and Water Commissioners, which is to be appointed by the Governor, and which is to consist of three men, one of whom must be a competent civil and hydraulic engineer, and another a competent bacteriologist. The bill appropriates $75,000 to carry out the provisions of the act. The intent of this bill is good in so far as it emphasizes the necessity for such work to be attended to in an energetic and scientific manner, and at once. The best method of accomplishing this desirable object is a legitimate subject for debate. If we, in our State, had a system by which men were especially educated in matters of public hygiene and were compelled to earn the degree of Doctor of Public Health before exercising the function of Health Officer or Health Commissioner in any community, there would be no necessity for the creation of such a commission. In a previous report this Committee, and our then President, Dr. H. R. Hopkins, called attention to the desirability of thus elevating the standard of service in the Department of Public Health. Instead of creating new boards it seems to your Committee that the time has arrived when the State should demand the most intelligent and active service from its various health officers, and should proceed at once to afford such as desire to enter that service an opportunity for special preparation in accordance with the method so successfully employed in England. In the meantime the object desired could be accomplished under the direction of the State Commissioner of Health by the addition to the funds at his disposal of a sum much less than that called for in this bill.

But of even greater importance than the purification of sewage, however valuable that may seem, is the perfect disinfection of all typhoid dejections before they are emptied into a sewer or privy or buried in the ground. For this the attending physician is directly responsible. The awful epidemic in Ithaca, and, indeed, all great epidemics, was directly due to the neglect of this very simple precaution. The false idea that frost kills typhoid germs must be intelligently combated, and the physician must

be as alert in seeing that all dejections are sterilized before disposal during the cold months as he is during warm weather. If all typhoid dejecta were sterilized before disposal this disease would be eliminated as absolutely and as quickly as has been yellow fever from Cuba under the energetic and intelligent direction of General Leonard Wood.

*Tuberculosis.*—The control of tuberculosis is less easily possible because of the nature of the disease. But the State and physicians have great responsibilities in this matter and can do much to forward the work by the early completion of the sanatorium in the Adirondacks for incipient tuberculosis, by the establishment in every community of a hospital for the tuberculous, and by the scientific care of those wards of the State who have developed tuberculosis while in public institutions for restraint or for treatment for special diseases, or in poorhouses. The antiquated buildings and unscientific housing of the dependent classes can no longer be tolerated by an awakened public conscience.

*Smallpox.*—The prevalence of smallpox in many communities this year is sufficient commentary on the laxity with which our good laws for the control of this disease are carried out. Such a state of things cannot exist in a vaccinated community. We must repeat the demonstration of Jenner of the value of vaccination. And we must insist that vaccination be performed by public officers with as great attention to surgical asepsis as is demanded in major operations. If life insurance companies, including the industrial companies, would ask the date of the last successful vaccination, instead of "Have you been successfully vaccinated?" and refuse to issue policies except to those who show evidence of competent and recent vaccination, much help would be given. The re-vaccination of children after the age of puberty is neglected, and it is our duty to see that this is carried out systematically.

Because of the want of uniformity in the vaccine laws of different communities, and of the fraudulent certificates of vaccination issued by those opposed to vaccination, your Committee recommends that no child shall be admitted to any public or private or parochial school, until his scars have been examined by the public vaccinator, or other competent authority, and have been pronounced to be those of successful vaccination.

The State distributes diphtheria anti-toxin and anti-tetanic serum to those physicians who make requisition for it through

their local health officers. Your Committee recommends that under the direction of the State Department of Health, vaccine lymph is produced and distributed in the same manner, for it believes that in no other way can standardized and effective vaccine be uniformly supplied.

*Tetanus.*—The relation of tetanus to accidents with toy pistols and blank cartridges has been demonstrated in recent years to the satisfaction of all surgeons. This Society should give support to a measure to be introduced by Senator McCabe of Brooklyn, this winter, which prohibits the sale of blank cartridges to minors.

*School Hygiene.*—One of the most effective methods of educating the public as to the nature of infectious diseases and how they can be controlled is the teaching of the essential elements of this subject in our public schools. The medical inspection of public schools has been recognized throughout the land as of the greatest importance. Its primary aim is to aid in the control of the infectious diseases, and to safeguard the individual victim of physical conditions which interfere with his development from the harm which must inevitably follow. But possibly of greater value than the direct practical benefit to the individual, and to the community, resulting from the early detection of infectious diseases, or of crippling physical conditions, is the object lesson to both teachers and pupils of the importance of accurate observation of disease conditions. Your Committee recommends that physicians in every community urge the benefit of such inspection, and by every legitimate means try to secure competent medical inspection of every school in the State.

*State Laboratory for Bacteriological Diagnosis.*—In this connection it is fitting that the Committee gives its unhesitating support to the maintenance of the State Laboratory for Bacteriological Diagnosis. The practical value of such a laboratory to physicians practicing their art away from medical centers cannot be exaggerated.

*Public Buildings and Tenements.*—The recent holocaust in a Chicago theater has again called attention to the criminal neglect of public authorities in guarding the lives of the people in public buildings. Not only should the laws for protection from fire be stringently enforced in every community, but the equally important laws requiring sufficient air space and competent ventilation and plumbing in all buildings in which men and

women are employed or are permitted to congregate be looked after. There is no question but that a greater loss of health and life results annually from neglect of these requirements than is caused by such fires as that of the Iroquois Theater, though the result is not so dramatic. The constitutionality of the Tenement-House Act has been upheld by a decision of the Court of Appeals handed down on January 8, 1904. The provisions of this act should be extended by legislation to cities of the second and third classes, for in them, as in New York and Buffalo, the tenement-house problem is coming up, and must be met by energetic action at the start. Your Committee urges the utmost vigilance on the part of every member of this Society in maintaining what has already been accomplished for the better housing of the poor.

*Child Labor.*—Chapter 255 of the laws of 1903 amends the labor laws relative to the employment of women and children. The provisions of this law limit the hours of employment of women and of children between the ages of fourteen and sixteen, and prohibit the employment of children under fourteen in any establishment except during the summer vacation in cities of the third class. The provisions of this law are humane and right, and it is our duty as physicians to aid the Commissioners of Health in enforcing it.

Your committee in reiterating what is known to most of you, and what has been said often enough before, has no apology to make. It is only by constant repetition that we can keep before the public the importance of the subjects under our jurisdiction, and only by repeated recalls to our duty as citizens that we can disentangle ourselves from the engrossing cares of the daily routine of our lives.

JOHN F. HEFFRON,
JOSEPH D. CRARY,
D. V. STILL,
M. A. VEEDER,
JOHN H. PRYOR.

---

AN ALCOHOL SUBSTITUTE.—Alcohol, suitable as a substitute for ordinary alcohol, is obtainable, according to a German inventor, from fæces by submitting the fæces to dry distillation, absorbing the gases produced in water, and distilling the mixture thus obtained. The residues from this last distillation may be used as the medium for absorbing the gases.

# SCHOOL HYGIENE AND THE NEED OF MEDICAL SUPERVISION IN ALL OUR SCHOOLS.*

By H. ERNEST SCHMID, M.D., White Plains, N. Y.

For more than a quarter of a century I have been closely identified with our free public schools, most of which time as president of the Board of Education.

I know we medical men are very apt to shirk all responsibilities outside of our professional work. This is altogether wrong. Physicians have duties toward the State just as other men have. I have always taken for my example as a citizen the late lamented Professor Virchow. The most industrious of scientific workers, he yet always found time to take a most active part in the political life of his country. But he always labored in that department in which his scientific knowledge would make him of most value. Where could we medical men then find ourselves of more use to the commonwealth than in the educational fields? And there our very professional attainments can be put to great advantage to the State. I say to the State, for the State's life depends on the evolution of our free public schools. A higher and higher state of education alone is a surety of the perpetuation of the free institutions under which we live. And a higher and higher educational development cannot be thought of without a more and more perfect teaching and enforcement of hygienic laws. To neglect the hygienic condition of the pupils is to neglect their mental growth and impair their future civic virtues. Civic virtues! This word always makes me swerve for a moment from whatever I may be considering, and deliver myself of a few words on the most important of all—obedience to the laws. Have you ever thought of the terrible fact that we are the most unlimited law-breakers in the world? We make no end of laws, and when they do not suit us we break them without the slightest hesitation. In my several official capacities, when I considered it my duty to enforce obedience to laws, I've been met with the utmost opposition, and been esteemed a personal enemy. Whence arises this moral defect? I am perfectly sure it comes

*Read at the Twentieth Annual Meeting of The New York State Medical Association, New York, October 19-22, 1903.—"New York State Journal of Medicine," January, 1904.

from the lamentable lack of enforcing obedience at home and in school, and lawless children make lawless citizens.

Unfortunately, many of our people confound liberty with license—think it manly in a boy to be uncontrollable and irreverent to his elders, and liberty-loving in a man when he breaks an inconvenient law. Gentlemen! If there be a bad law repeal it, but while it is in force keep it. Pardon this digression.

Therefore medical men should take upon themselves the duties of school board trustees whenever possible. Since a large proportion of the ill-health of a community is found in children of school age, it is very natural that we should inquire if perhaps this be due to defects in school hygiene, and if a large portion of it might not be prevented by improvement in that direction. Teachers and parents alike in many instances do not realize, for example, that the children's eyesight can be impaired, normal growth prevented, the blood poisoned and the body starved because of lack of knowledge of how schoolrooms should be arranged, and what hours should be devoted to study. For all these reasons I have endeavored to direct your attention to the great importance of school hygiene, as well as can be done in a short address like this. How important it is you will readily see. Everything, in fact, is of importance regarding the school, which exists for the greater elevation of the state of society and which can be assisted so essentially by the home, and will, in turn, educate the home. In the construction of its buildings and its administration the school should be supplied with and guided by whatever best and newest hygienic science has discovered in reference to it, and, as I said, but a moment ago, while the home can aid the school greatly, if desirous of doing so, sound hygienic teaching, in turn, can often reach the home far better and more quickly than in any other way, through the reflex influence of the school on the home. The people must come to the conviction that any educational plan which neglects the relation of mind and body in its hygienic and ethical import is to be rejected.

*"Mens sana in corpore sano"* is as true to-day as when it was first uttered. The preservation of health is an almighty factor in building up character. With these introductory remarks I desire to claim from you your serious attention to my words, no matter how far short they will fall from what they would want to effect.

The first to be considered is the selection of a proper site (hygienically proper) for a schoolhouse. The law in regard to it is not what it should be. In all places (with few exceptions in dis-

tricts where a special legislation has been enacted) it is chosen by a district meeting. It should be in the power of the boards of education. I have seen repeatedly district meetings packed by a certain party and a site voted and extravagantly paid for which was totally unfit for a school building. I have, therefore, succeeded in establishing a law by our State Legislature which empowers boards of education in villages of 5,000 or more inhabitants to select sites for new school buildings themselves.

A site should have perfect drainage capacity of the soil, which depends on whether it is of fine or coarse grain. This drainage capacity of the soil, of the lot, the amount of its slope and its nearness to streams, surface or underground, make the healthfulness of it. It must be so shaped by nature that it not only carries off easily refuse and excreta from within the building to be erected upon it, but also surface and rain water flowing over the ground. If it is not perfectly dry it should first be underdrained. If you look to all this and can say that no malarial influence can prevail there; that light, and with it cheerfulness, will be bound to reign within the house; that pure and plentiful water which cannot possibly be contaminated can be introduced into it and as easily removed from it, after having been used; that a proper system for removal of sewage exists within, as well as a perfect system of ventilation, carrying off all respiratory impurities, and that complete dryness of foundation walls and roof is found—then will you insure a healthy habitation.

I need not take up your time in telling you that the dampness from improperly constructed walls must have a bad effect upon the health of the inmates. I take for granted that this is all properly looked after by even a most ordinary set of trustees; but to the student of school hygiene there are many important matters which an ordinary builder, or even an architect, not conversant with school needs, will generally overlook; no, will often not know at all.

From the special investigations of physicians, architects and engineers the conclusion has been arrived at that the ideal classroom should be oblong in shape, and, if possible, 30 feet long, 25 feet wide and 13 feet high, with a seating capacity for 40 pupils. Such room would give to each pupil 18¾ square feet of floor space and 243¾ cubic feet of air space. Light should always come in at the side of the room (preferably the left side of the pupil) or the side and back. Now the dimensions of the room in length and breadth must be governed by the distance pupils can

see without straining the eye and also the distance they can hear clearly the words of the teacher.

It has been proposed to put more pupils into primary grade rooms, because the desks in them are naturally smaller, but this could not be done without danger to eyesight and hearing; the number of cubic feet of air space would be lessened for each child, which would mean so much less oxygen (the food of the child par excellence) for each.

In the above dimensions of an ideal classroom there would be found a good deal of space not occupied by desks, but this would be especially useful in primary schoolrooms for conducting different exercises. You must recall to mind this important need, that primary pupils must not be kept quietly seated more than one-third of the school hours. Smaller children do not only become restive and in that state illy attend to their tasks, but exercises of various kinds to call into play muscular activity are imperatively called for at that age for the sake of mental as well as physical development, and not altogether only for relief from fatigue of long-continued sitting. Have not all of us who are fortunate enough to be fathers of children observed how wonderful is the activity of the little ones? Could we grown men and women keep up with them during a whole day? Certainly not. But their nature demands this tireless activity. How terrible, then, would it be for these little ones, untrammeled in the day's wide-awake hours of activity, to be suddenly placed in a room and upon a seat for hours every school day, with no material change of position! It would make the school hateful in their eyes at once. Blessed, then, is the kindergarten, with its playful instruction! Have any of you ever visited and seen the doings there? If not, do so, and you will be astonished at the quickness of perception instilled there. Children, whose minds have received the first training of the power of observation there, can be traced all through the grades for brighter and quicker intelligences.

The best and most hygienic school desks are no guarantee against defective posture, ending in permanent disastrous distortion of the body, which was assumed from fatigue and inactivity.

Some of you may perhaps know that quite a controversy has been carried on regarding vertical and slanting handwriting. All manner of claims were made for the slanting kind, but all of them were made unmindful of the great question which should be answered before deciding for the one or the other. It is this: What

effect has the learning or exercising of the one or the other upon the health of the child? Then there can be but one answer: The learning of the slanting writing is most injurious to many children, for they must then assume a constantly strained position, which the vertical does not call for. I am perfectly aware that 75 per cent. of the pupils would not be hurt by it, being endowed with more vigorous frames, but 25 per cent. are always found among 100 children, in whom a deformity could readily be produced. This is a fact based upon statistics. Therefore, do not suffer any to say: "It did not hurt us when we went to school"—a narrow, selfish and thoughtless expression and unworthy the make-up of an intelligent person. But when one tries to be a reformer it is frequently expressed by the common multitude. Permit me to tell you, in relation to this statement, how a distinguished German investigator found that of 1,000 cases of curvature of the spine 564 developed it between the seventh and tenth years of their lives, which is at a time when with the beginning of the second dentition an increased growth of the whole skeleton takes place.

To continue the description of the ideal classroom I would say that according to the above authorities the window-sills should be 3½ feet from the floor and the windows extend up to the ceiling. The amount of glass space should be at least equal to one-fourth of the floor space, and better still one-third. The divided window shades, which come from both top and bottom of the windows, are to be excluded, and only those that roll from the bottom, that the light may come in from above and be more evenly diffused by striking the ceiling first. The walls should be painted, not calcimined, for obvious reasons, the best color being a greenish-gray. There should be plenty of space before the blackboards to give the children freedom of motion.

I come now to a very important matter, which is the proper treatment of the children's eyes and ears. Since sight is really the chief medium of education, it cannot be too carefully looked after, and yet it is a fact that myopia is most frequently (if not altogether) developed during school life, and this is because during that period of growth the eye is more liable to change in form, and children have much greater power of accommodation than adults, and hence hold objects more closely to the eyes. From this looking at objects so very closely they are called to look at the blackboard from their seats,

which calls forth a frequent change of accommodation. Next in importance is the hearing, which is likewise grievously tried.

The cloak-rooms or closets are apt to be in the most unsanitary condition, without ventilation and reeking with bad odors. In the same condition you may find the urinals and latrines.

I fear to weary you with further details, and yet they are all of decided importance. Nevertheless, all I have mentioned, in fact, the whole (may I call it so?) *physical* part of school hygiene shrinks into insignificance when compared with the *mental* hygiene of the school. I may not express myself altogether clearly, but you will see at once what I mean.

There exists a natural variation in the structure of the pupils and in their propensities and limitations. I am certain that teachers are not generally informed in this. Medical men, for this reason, should use every opportunity to impress this fact upon their constituents—this fact, that human beings differ in their capacity. The failure to recognize it unquestionably has led, in many instances, to insanity in the people concerned. Not a few alienists have expressed the belief that it really is one of the most fruitful causes of insanity. There is no question, in my own mind, that this is so, and that many, very many, cases of insanity can trace their origin to this period of development, during which the mental organism received an undue strain and the physical organization was illy looked after. I read only lately of a child, the daughter of a college president, who was an infant prodigy, who at the age of 13 years was such a Greek scholar that one of her teachers said, that were Hadley's Greek Grammar suddenly blotted out of existence this child could reproduce the whole of it from memory. She became insane and finally died in an insane asylum.

It is absolutely a matter of impossibility to find remedies for all the difficulties we meet. We do not have definite knowledge about the effect of education upon the brain cells. Donaldson asserts that the intensity with which any form of exercise is carried on during the growing period leaves its trace and the absence of it at the proper time is for the most part irremediable. Thus any lack of early experience may leave a spot permanently undeveloped in the central system—a condition of much significance, for each locality in the cerebrum is not only a place at which reactions, using the word in the narrow sense, may occur, but by way of it pass fibers having more distant connections, and its lack of development probably reduces the associate value of these also.

Oppenheim says: "One must keep in mind that the faculty which governs mathematical computation is located among the higher centers of the cerebrum; that this part of the brain is among the latest to attain maturity; that therefore in childhood it is in no condition to put to a strain. Whenever a scholar at this age is forced into attempts to use this faculty a process similar to any other sort of work results. One can the more easily understand the inevitable outcome from a knowledge of the fact that the nerve cells of children, being more or less in a state of unstable equilibrium, are easily exhausted, so that a consequent nerve poverty must show itself. Thus such children receive no permanent value from the studies in mathematics, simple though they be; and, what is more, if these studies were not begun until greater maturity—say at least 10 years of age—not only would a vast amount of nervous wear and tear be saved, but the children would also learn as much in one year as they formerly, under the present adverse conditions and methods, learn in five. The time thus saved might be profitably employed in strengthening both mind and body.

I fully coincide with this author. I am sure most of us, were we to examine our early records, would find some study which was most impossible for us to grasp, but which later years robbed of all its difficulties. As to mathematics there is no doubt about the true value of the above statement, and it only serves as another argument for intelligent medical supervision of all our public schools. And it is to this point I have been striving to come since I began my address to you. There should be a highly intelligent medical adviser in all our schools, looking after everything pertaining to physical and mental hygiene of the children, and also instructing the teachers in the psychology of that early period in life. Only then can a teacher be competent to teach so as to suit the capacity of a pupil. Only then will the important fact be brought into the clearest light, that the standard for teachers of the primary grades should be as high as the highest classes, because it will be understood that pupils in the primary departments can be much more, infinitely more, easily influenced for good or evil than in the advanced grades. Unsuitable tasks will produce much greater damage upon the more impressionable brain cells of the very young child than the older ones, whose cerebral substance is more fully developed. Finally, imitation being the great characteristic of the very young child, it needs all the more the best examples set by competent teachers.

This medical inspection of schools has been carried on in many cases with marked benefit. In Hungary the school physician devotes his whole time to the school. He studies and examines the school building from a sanitary standpoint, internally and externally. He investigates its surroundings, the air in each classroom, and analyzes it from time to time. He inspects the lighting, heating and ventilating of each classroom, and regulates the number of children in each. He makes yearly measurements and general examination of the children, and by this arranges for their seating; and this not only to adapt their size to the desks, but also with regard to special requirements of certain pupils of defective eyes and ears.

In London, England, a physician examined several thousand school children for the avowed purpose of seeing if he could detect any evidence of overstudy. He found that over 46 per cent. of the pupils were suffering from nervous headaches, and from his observation was able to prepare a strong argument in favor of reducing the mental pressure in schools.

New York City appointed (in 1897) 134 physicians to visit the schools. This number has since been increased to 150.

In 1899 the Chicago Board of Education appointed 50 medical inspectors at $50 per month to serve during the school year while school was actually in session.

In Boston, though proposed by the Board of Education in 1890, lack of funds delayed the carrying out of the plan until 1894. In Paterson, N. J., it exists since 1900; in Minneapolis, since 1901; in Detroit, since 1902; in Lincoln, Neb., since 1901. In our own district I have had our Board pass a resolution by which I am empowered to call in medical inspection whenever needed. This is a good beginning, but it is not enough. Can we not have a law added to the consolidated school law which would make medical inspection obligatory upon all boards of education?

I ask you, Fellows of the State Medical Association, to take the initiatory step in this most important and noble enterprise. All hygienic measures are the therapeutics of preventive medicine—the great medical goal of the future. And since the future of our great republic rests with the generations to come, and since it lies in our hands to make them better and better prepared for their great tasks, let us be up and doing. The intelligent physician, par excellence, is a true guide in all that concerns the proper development of our children. Then let us all strive to be such guides, preparing all these millions of budding citizens for direct and in-

direct self-preservation—for parenthood, for citizenship and the miscellaneous experiences of life.

DISCUSSION.

DR. E. B. SILVERS, of Rahway, N. J., said that he had been superintendent of the schools of his city for many years, and he could heartily endorse what had been said in the paper. At first a number of young and poorly equipped teachers had been placed in charge, through social, religious and political influences, making their positions mere stepping stones to matrimony. Of good hygienic conditions they were entirely ignorant; ventilation and temperature were measured by the feelings of the teachers when they were excited by the effort of faulty discipline. Thermometers were introduced and properly placed, and these young ladies were directed to consult them. Only mature teachers should be placed in the primary and intermediate departments where the masses are chiefly educated.

DR. JAMES J. WALSH, New York, thought we should all be grateful to Dr. Schmid for showing us what should be and could be done. Certainly there had been a great deal of neglect in this matter. Physicians must be careful, however, that they do not make mistakes and run into fads. There were some things in the paper that perhaps might be taken exception to. Vertical writing has not proved as acceptable in practice as in theory. The present tendency in this country is to go back to slanting writing. The three hundred years we had had slanting writing led many educators to think that there was something in the mental make-up of the human being, not yet well understood, which made him tend to slanting writing. There are many things which can be done, and our school inspectors at the present time are very properly engaged in an earnest effort to prevent the spread of many contagious affections, some dangerous to life, others merely a handicap in life. There were many improvements in medicine of which the public knew very little. For example, it was known that the operation for adenoids had done much, not only by improving the respiration, but in increasing the mental capacity and development. The teaching of hygiene and physiology in this country was nothing but a laughing stock to Europeans. We were teaching a lot of untruths and nonsense about alcohol, and that was about all. Unfortunately, our text-books were absolutely dedicated to us by a set of fanatics, and unless these books contained a certain amount of a certain physiological teaching these

books would not be approved, and yet just such teachings had failed to receive the approval of the scientific world, as any one may see who cares to read the report of the Committee on the Physical Aspects of the Liquor Problem, recently published under the direction of such men as Billings, Welch, Chittenden, Bowditch and Atwater.

DR. SCHMID, in closing, urged that a committee be appointed, or the Committee on Legislation be requested, to take steps which might carry out the intent of his paper. In his own district the Board of Education had passed a resolution empowering him, in the event of the occurrence of contagious disease among the children, to call in a physician and have the whole class examined. In a number of instances he had succeeded in this way of stamping out epidemics of diphtheria and even of scarlet fever.

## EDUCATION AND THE ELIMINATION OF CRIME.

The following (Consular Reports, Dec., 1903) is a résumé of an article (translated in the Bureau of Statistics) in "Die Woche" (The Week), a German magazine, of August 22, 1903:

Since the Prussian schoolmaster is said to have won Sadowa, education in Europe has been taken as the measure of culture. Knowledge of the elementary parts of the sciences is now regarded as essential to progress. Everywhere in the Western World the school doors are being flung wide open, particularly for the people who have to labor. Taking the year 1840, the year in which the modern movements may be said to have got fully under way, and compare it with the year 1896, the year for which one can find statistics for most European States, we find that the percentage of those who could write in those years was as follows:

| *Country.* | 1840. *Per ct.* | 1896. *Per ct.* |
|---|---|---|
| Great Britain | 59 | 94 |
| France | 47 | 95 |
| Germany | 82 | 99 |
| Russia | 2 | 22 |
| Austria | 21 | 69 |
| Italy | 16 | 56 |
| Spain | 14 | 42 |
| Holland | 70 | 90 |

| | | |
|---|---|---|
| Belgium | 45 | 83 |
| Scandinavia | 80 | 99 |
| Switzerland | 80 | 99 |
| United States | 80 | 83 |

These figures furnish cause for rejoicing.

While the percentage of increase in the population between 1840 and 1888 was only 30 per cent., the educational increase was 145 per cent. The percentage in the United States is depressed by the hundreds of thousands of ignorant immigrants. As long as the tide of immigration took its supply from lands in which education was advanced and compulsory the United States stood farther up the list. In 1889 92 out of every 100 grown persons could read and write. Since that time the immigration from western Europe has fallen off and that of eastern Europe increased. Russia, Hungary, Austria, and the Danubian lands have been sending their children to the New World, and the percentage for the United States went down; this, too, notwithstanding the fact that the Commissioner of Immigration is supposed to keep out all those who cannot write their own names. Some of the foregoing figures are based upon estimates, hence are to be carefully considered. Figures taken from the different recruiting offices are a better basis upon which to build. In these, Germany leads again, with only 1 in 1,000 unable to read and write:

| *Country.* | *Per* 1,000. |
|---|---|
| Germany | 1 |
| Sweden | 1 |
| Denmark | 4 |
| Switzerland | 22 |
| Holland | 40 |
| France | 49 |
| Belgium | 128 |
| Austria-Hungary | 220 |
| Greece | 300 |
| Italy | 380 |
| Russia | 620 |
| Servia | 790 |
| Roumania | 890 |

The number of men in Great Britain who could sign the marriage register was 67 per cent. in 1841, and 88 per cent. in 1888;

of the brides, 51 per cent. could write in 1841, and 84 per cent. in 1888. In France, 55 per cent. of the women, and 71 per cent. of the men could write in the marriage register in 1861, and 78 per cent. of the women, and 86 per cent. of the men in 1883. In Italy the conditions, though bad, are encouraging. In 1871 only 23 per cent. of the women were able to write in the marriage register; in 1883, 33 per cent. It all indicates the marvelous progress of modern times in the matter of education. France, in particular, in a shining example. She now leads, and Germany steps back from first place. The amounts paid by France for education increased more than fivefold from 1860 to 1892. Between 1880 and 1892 they more than doubled. In other words, they went from 28,000,000 marks ($6,664,000) in 1860, to 66,000,000 marks ($15,708,000) in 1880, and 148,000,000 marks ($35,224,000) in 1892, although the population was practically at a standstill. The schoolmaster of Sadowa and Sedan has taught France well. Mulhall was of the opinion that there was a direct connection between ignorance and crime. As proof of this, he furnished the following figures showing the illiteracy and crime in Great Britain:

| *Description.* | 1841-50. | 1851-60. | 1861-70. | 1871-80. | 1887. |
|---|---|---|---|---|---|
| Children at school to every 1,000 of population.. | 11 | 26 | 47 | 82 | 125 |
| Criminals to each 100,000 of population ..... | 122 | 96 | 68 | 50 | 38 |

The number of youthful criminals fell from 45.8 per 100,000 of population to 21.5, and this brilliant result was attributed by Mr. Mulhall directly to the improvement in education. Now, we are the last in the world to depreciate the value of education as an aid to good morals and civic virtue, but it seems to us to be going too far when we give the school all the credit for this great change for the better. For, alas! in other lands, equally well provided with schools and educational facilities, the number of youthful criminals is increasing. In Germany 741 per 100,000 of population in 1886, and 873 in 1895, were condemned for crimes; but the number of youthful criminals went up from 31,510 to 44,380, or from 89 per 1,000 to 98 per 1,000 of those sentenced. There was an increase in youthful crimes of 40 per cent., while the population increased but 10 per cent. This shows that the connection between

crimes of young people and education is not so close as Mr. Mulhall would have had us believe.

The humane state will have to devote a large part of its work of crime prevention through educational agencies. In this regard, it is interesting to note that there is a close connection between prostitution, vagabondage—this fruitful mother of crime—and crime. Among the masses of women who sell themselves for the world's pleasure, the illiterate make up by far the largest part; on the other hand, the highly educated supply only a vanishing fraction. In Paris, out of 4,470 examined, 2,392 could neither read nor write, 1,780 could barely read and write, and only 110 could do both well. In Manchester, not 1 per cent. of those examined could read and write. Dr. Baer, the distinguished advocate of temperance, tells us that of Germany's criminals 14.4 per cent. were analphabets—persons ignorant of the alphabet. In some penitentiaries east of the Elbe 54 per cent. were illiterates. There is doubtless a connection between education and the decrease of crime, but one must not forget that the almost miraculous change in England is largely due to the wonderful advantages offered by the fairy-like progress in material things through which England has passed during the last fifty years. While the prices of foods, clothing, and living generally has decreased, wages have gone steadily upward. Want and temptation vanished; hence crime, so long affected by the price of bread, decreased. The better education has only helped as one factor in progress.

One ought to add, by way of suggestion, at least, that the increase in crime on the Continent, particularly in Germany, may be due, in a very large measure, to the great change in the lives of the people. Since 1840 the German Empire has changed from a farming or agricultural state to an industrial or manufacturing one. In 1840 67 per cent. of its people were on farms, and 33 per cent. in mills; to-day, 66 per cent. are in the mills, shops, etc., and only 34 per cent. on farms.

---

## SOME DISCOVERIES FOR THE PREVENTION OF DISEASE.

The first of a series of health lectures, under the auspices of the Royal Institute of Public Health and the Town Council, took

place in the Assembly Room of the Town Hall, Chester, November 19. The lecturer was Prof. W. R. Smith, M.D., D.Sc., F.R.S. (Edinburgh), President of the Royal Institute of Public Health, who took for his subject, "Some Discoveries for the Prevention of Disease."

The lecturer explained that the series of lectures were under the auspices of and also managed by the Royal Institute of Public Health, with the co-operation of the Town Council, and were for the object of bringing home to the citizens a few points connected with the important subject of public health, and this not only to give them a more intelligent concern in those matters, but that they might better appreciate some of the reasons which guided the Council as the Public Health Authority in the action which they took from time to time under the parliamentary powers vested in them. After showing the relation of the duties of the physician and the public health officer—the curing work of the one and the preventive duty of the other—the professor dealt with the history of disease in this country, reviewed the various and numerous pestilences which used to so frequently ravage the country, such as the "black death" of mediæval history, and also cholera, scurvy, prison fever, smallpox, etc. He then dealt with the advance and triumphs of medical science and its effects upon the public health, and also reviewed and eulogized the great bacteriological researches and experiments of Louis Pasteur, and the innovation of the antiseptic treatment in surgery by Lord Lister. Turning to the subject of micro-organisms, he explained the difference between "micrococci" and "bacilli," and showed the part they played in disease; then proceeded to deal with several well-known forms of disease. Turning to tuberculosis, the lecturer quoted numerous statistics to show that death from tuberculosis had steadily fallen during the past half century, *i. e.*, 3,484 per million during the years 1851-60, to 2,059 during the decade 1890-99, or a diminution of 40.9 per cent; a further reduction to 1,899 in 1900, making a total reduction of 45½ per cent. They must recall the fact that phthisis was a form of tubercular disease which overshadowed all other tubercular affections. There was no better criterion of the public health of a district than the death rate from phthisis, though the error was commonly committed of estimating the health of a district from the returns of zymotic diseases. Consumption was always considered to be a hereditary disease, and the greatest pains were taken to trace the disease from some worthy or unworthy ancestor. That was all now a

thing of the past. They could have no tubercle of consumption without the presence of tubercular bacilli, and the disease could only be transmitted through the agency of the bacilli. In that case heredity, as they ordinarily used the term, could account for but very few—in fact, none—of the cases of tuberculosis that occurred in man or animals. Children did not inherit tuberculosis from their parents, although they might inherit a weakness of constitution that would enable them to nourish the parasites which had caused the trouble to their parents. All that was necessary to enable a child to withstand the effects of the bacilli was to strengthen the tissues and build up the constitution with good food, fresh air, sunlight, and plenty of exercise, and further, to place the child in such conditions that the bacilli could not obtain access to him. Every case of consumption must arise from a pre-existing case, and it was interesting to note that during the past fifty years deaths from consumption and other forms of tubercular disease, so far as adults were concerned, had been reduced 50 per cent. This was mainly due to the attention given to sanitary measures. Consumption, they knew now, was a contagious disease communicated from person to person, and according to some authorities from animal to man, and it did not arise in any other way. The two chief sources of infection were the sputum of infected persons, and the milk from cows with tubercular infected udders. He emphasized the great dangers in connection with spitting and the necessity for only sterilized milk to be used. Local sanitary authorities and officials were fully alive in including tuberculosis in the list of diseases which came under their cognizance. They were doing their best to encourage the voluntary notification of the disease, and they further endeavored by the issue of pamphlets giving hints to householders, and by the examination of milk and prohibiting its sale if found to be tainted with tubercular bacilli, to prevent the spread of the disease. He pointed out that the danger from meat was very much less, as nearly all meat was cooked, and in the cooking operations the germs were destroyed. The causes of tuberculosis now generally recognized were—overcrowding, dirty living rooms, want of ventilation in living rooms, offices, workshops, and factories, and the failure to take precautions to prevent the spread of infection. He wanted to impress upon them the desirability of having plenty of fresh air. Let them open their windows and keep them open, and also allow no lodgment of any particle of dust in their dwellings. Speaking of smallpox vaccination, the lecturer reviewed

the labors of Jenner, and said that it was difficult for us to realize what smallpox was in this country before the time of Jenner. When it did not kill it was followed by the most distressing conditions, such as blindness, deafness, deformity, and generally impaired health. In fact, it was the most destructive of all pestilences because of its universal prevalence in every part of the world among all classes and ages, and in all seasons. Vaccination had been an inestimable blessing to mankind. But, notwithstanding the convincing proofs of the protective power of vaccination, and practically the unanimous verdict of the medical profession in its favor, notwithstanding the authoritative judgment of several Royal Commissions on its utility, and legislative sanction in addition, vaccination had hitherto been carried out in a hesitating and incomplete manner in this country. This one sure safeguard against a loathsome disease had been neglected, evaded, and performed in a perfunctory way, so that there was always remaining among them a mass of susceptible material. After quoting numerous statistics showing the advantage of vaccination, the lecturer said that in Chester they appeared to have very healthy conditions, and were fortunate in having such a controlling body of public health administration as the Council. They were certainly more fortunate than many cities he was acquainted with, and he was happy to see that so many members of his own profession took such an active interest in the public health of the community. He especially praised the work of the ex-Mayor (Dr. Roberts). After dealing with the cause and treatment of diphtheria, and showing the micro-organisms connected with malarial fever, the lecturer, in conclusion, threw out the suggestion that the Council should obtain the services of a woman inspector, and pointed out the great advantage this would be, and how it would tend to the welfare of the poorer inhabitants of the city. (Applause.)

A vote of thanks to the lecturer, proposed by the Mayor, and seconded by Dr. Roberts, closed the meeting.

The lecture was beautifully illustrated with many interesting lantern slides, shown by a powerful electric lantern.—"The Sanitary Record," November 26, 1903.

# SOME THOUGHTS ON MARKET HYGIENE.

By Dr. Harvey B. Bashore.

Anyone who has seen the great markets on the East Side of New York, or the Italian market at Mulberry Bend, must be struck by the unsanitary condition of the food offered for sale—it looks filthy, and it is filthy; but the condition between these markets and the markets where we procure our own eatables differs only in degree: to be more definite, it is a question whether all our markets and food stores are not a little behind in their sanitary conditions.

We all want pure air, pure water and pure food. This is our twentieth century birthright. Pure air and pure water have been studied a good deal, and much is known about them; but the food question is made up of so many various items, and so many different conditions enter into it, that it is not so simple as might be desired.

The exposure of food, on the one hand, to the dirt and dust of the street—a common condition—is certainly undesirable: take, for example, bread, which is neither washed nor again cooked before again appearing on the table. Bread is almost universally delivered in a more or less open condition and sold so in the markets, and I should just like to see the bacterial growth which could be cultivated on one square inch of its surface, when it finally reaches the consumer.

I know of one firm in Philadelphia, and I suppose there are many, which ship their bread by express in open crates a hundred miles or so, and then redistribute it by trolley to suburban places—very good bread it is, they say—but it must be very filthy.

I know of another baker who did quite differently: he arranged his market stand with white enameled fixtures; had clerks dressed in white duck, and everything else was pervaded with an air of cleanliness. This stand was the admiration of every one who saw it, and though the bread was probably no better than his neighbors', it looked nice and clean, and that baker is now on the road to fortune. So it seems that people in this particular place and for this particular product preferred to pay for cleanliness; it is the same elsewhere.

The oyster and the fish departments need a complete revision:

oyster shells should certainly be cleaned before opening, for though the mud and dirt clinging to a shell may not contain many germs, we do not care to have it served on the table. The hands of the opener should, above everything else, be clean; nobody cares to have the liquor from the opened oyster drip over the dirty hands of the opener, and there is more in this than mere fancy, for filthy hands certainly carry myriads of disease germs. If the man wore rubber gloves and had on a clean white apron I believe the oysters would taste better—they would certainly be cleaner—and I believe a fortune awaits the man who can open oysters and still look clean and be clean. And now a word about the fish. We all admire fish in the water, but somehow the fish in the water does not seem the same you see at market. White porcelain-lined trays with water connection, so that they can be flushed frequently—with the addition of ice in hot weather—would add greatly to solving the fish market question: a place where no one likes to go, and generally don't go unless business calls that way.

In regard to vegetables we can probably tolerate a little carelessness, for vegetables are almost always so thoroughly cooked as to destroy all dangerous dirt; still, some vegetables, such as lettuce and the early spring greens, are not cooked before eating, and it is possible that disease might be transmitted in this way.

The fruit department, berries, cherries, etc., comes in for a fair share of criticism, for fruits are not often thoroughly washed before serving, and certainly gather much dirt when exposed in public places. The little fruit flies, which feed on fruit, have been known to carry typhoid germs on their feet, can go through the finest mesh of a wire screen, so that nothing but complete covering in glass cases is sufficient protection for fruit.

The California fruit which the "push-cart" men sell on the street corners in New York looks nice, but would any thoughtful person eat of it, after such daily dust exposure? Dr. Bell has called attention to the fact that the intestinal diseases frequently attributed to fresh, and presumably wholesome fruit and vegetables, are due to this dust exposure, and I believe he is right.

The marketing of meat, though not performed in the best sanitary way, probably carries with it little danger to health on account of the thorough cooking it undergoes before eating; yet, white-enameled racks, porcelain trays, glass cases and bright tools would at least seem cleaner, and be more inviting to the consumer.

## THE PREVENTION OF PNEUMONIA.

The intention of this article is not to deal with drugs which are to be used for the prevention of pneumonia, because, so far as we know, no such drugs exist. It is, however, important that every physician should recognize that croupous pneumonia is an acute infectious disease, and that as such we should take all possible measures to prevent its spread. There is reason to believe that persons who because of moderate vitality are prone to infection by the pneumococcus may very readily become ill if exposed to this organism. Several times within the last few years we have been impressed with the carelessness of physicians in regard to the possibility of infection by this germ. We have repeatedly seen patients, ill with pneumonia and influenza in hotels, cough violently, and unintentionally expel upon the blanket which covered them tiny particles of sputum which were literally reeking with pneumococci or with the specific micro-organism of epidemic influenza. While the proprietors of these hotels doubtless took care that the bed linen was carefully washed after being used by such patients, in the majority of instances they certainly were not instructed that the blankets were sources of dangerous infection, and doubtless other persons, many of whom were in impaired health, who have slept under these blankets have become infected by pneumonia, and have wondered where they have acquired the disease. Again and again we have seen the carpet exposed to similar chances of infection, and it is by no means uncommon to see a patient rest the surgical gauze, into which he has expectorated, upon the blanket which is in front of him.

While most physicians insist that patients with tuberculosis shall expectorate into spit-cups or cloths which either contain antiseptics or which are at once disinfected, they are far too frequently lax as to the orders which are given for similar treatment of the expectorated material in croupous pneumonia. While we have no way of destroying the pneumococcus when surrounded by some of the conditions which seem favorable to its existence, it is certainly the duty of the physician, not only for the sake of his patients, but also for his own benefit, to see to it that the myriads of cocci cast off by a patient with pneumonia are destroyed before it is possible for them to do further damage by infecting other persons.—"Therapeutic Gazette," Feb. 15, 1904.

# THE NEW TEXAS SANITARY LAW.

## DISINFECTION OF RAILWAY COACHES, PUBLIC BUILDINGS AND SLEEPING CARS.

The State Health Officer of Texas has just formulated ("Texas Medical Journal," January, 1904) the rules and regulations to govern the disinfection of sleeping cars and public buildings, as required by the law passed by the last Legislature. The law became operative in July last, but because of his duties as Surgeon-General of Texas before, during and since the encampment of the Texas National Guard (the Texas Militia) and the responsible, onerous and long-enduring work in the management of two yellow fever epidemics, and other duties of his office, Dr. Tabor really has not had time, nor has he the adequate assistance, to give this matter the attention its importance demands. These rules will be at once and rigidly enforced. They will be supplemented and amplified from time to time as the necessity for same becomes evident. Dr. Tabor will call a meeting in Austin of all county and city health officers some time in February, for a further conference as to details necessary to make this law effective. By "public buildings" is meant public schools, hospitals, jails, court houses, etc., but whether it means hotels or not, is yet to be decided by the Attorney-General.

### *Disinfection of Public Buildings, Railway Coaches and Sleeping Cars.*

An Act requiring the disinfection of public buildings, railway coaches and sleepings cars, and providing a penalty for the violation thereof, and declaring an emergency.

SECTION 1. *Be it enacted by the Legislature of the State of Texas:* That it shall be the duty of the State Health Officer of Texas, and he is hereby authorized and empowered to prepare rules and regulations governing the proper disinfection and sanitation of public buildings and all railway coaches and sleeping cars operated in the State of Texas.

SEC. 2. It shall be his duty and he is hereby authorized and empowered to prescribe a sanitary code, which shall contain and provide rules and regulations of a general nature for the improve-

ment and amelioration of the hygiene and sanitary condition of said public buildings, railway coaches and sleeping cars.

SEC. 3. Every person having control of any public building, railway company, sleeping car company, or other corporation, company or individual, or the receiver thereof, engaged in the carrying of passengers in this State, shall, at their own expense, within a prescribed time after receiving notice from the State Health Officer of the promulgation of the rules and regulations in the above sections mentioned, carry the same into effect.

SEC. 4. If any person having control of any public building, or any agent, manager, operator, employee or receiver of any railway company, sleeping car company, or any individual shall fail to comply with the provisions of this act, and the rules and regulations promulgated by the State Health Officer under the provisions thereof, he shall be deemed guilty of a misdemeanor, and upon conviction shall be punished by a fine of not less than fifty, nor more than two hundred dollars.

Approved, April 6, 1903.

## CIRCULAR NO. 1.

By virtue of the authority vested in me by the above act of the Twenty-eighth Legislature, the following rules are hereby prescribed, which shall govern the disinfection and sanitation of public buildings, railway coaches and sleeping cars in the State of Texas, and shall be effective on and after February 11, 1904:

1. Each passenger coach or sleeping car used for passengers must be provided with one cuspidor for each seat or every two chairs. Each cuspidor must contain not less than six ounces of a disinfectant solution approved by this department. The cuspidors to be emptied, washed in a similar solution, and replenished each trip or every twenty-four hours.

2. Public buildings must be provided with a sufficient number of cuspidors, or not less than one in each room or hall, treated in a like manner, and emptied, washed and replenished daily.

3. The floors of cars and public buildings must be sprinkled with a similar solution before each sweeping.

4. Sweeping and dusting of cars are prohibited in transit, except that floors of cars may be swept at division terminals or meal stations where passengers will be given an opportunity to leave

the cars during that time. Seats, windows and walls of cars must be wiped off with a cloth or sponge and not dusted in transit.

5. All sleeping cars must be disinfected by fumigation in a manner approved by this department at the end of each round trip in the State of Texas where sleeping cars do not leave the State.

6. All sleeping cars passing through or coming into the State of Texas must be disinfected in the same manner each trip at some point in the State approved by this department. All carpets, curtains, blankets and bedding, except linen, to be disinfected with cars.

7. Day coaches used for passengers must be fumigated, whenever the necessity exists, at some point in this State acceptable to this department. If a car becomes infected by being occupied by a person having a contagious disease it must be disinfected immediately at end of run.

8. All public buildings must be disinfected by fumigation whenever the necessity exists for it.

9. Containers of water for drinking, in cars and public buildings, must be emptied and thoroughly cleansed at least once every forty-eight hours. (Public schools should be provided with a separate cup at each desk for each pupil to drink from, or the pupils should be required to provide same.)

10. Ice, which is used in water coolers in cars, must not be dumped on the floors, sidewalks and car platforms where people have trod and expectorated, and then picked up by unclean hands and put into the drinking water. It should be washed and handled with ice tongs.

11. Passengers, patrons, employees or others must be prohibited from washing their teeth or expectorating in basins in sleeping cars, passenger coaches or public buildings which are used for bathing the face and hands. Large cuspidors must be provided for such purposes.

All local health officers and citizens are requested to assist in the enforcement of the above rules.

(Signed) GEORGE R. TABOR,
State Health Officer.

Austin, Texas, January 11, 1904.

## MEDICAL EXCERPT.

By T. P. Corbally, A.M., M.D.

The Best Remedy for Extreme Debility.—Animal food has always been recognized as a most stimulating and nutritious food. In recovery from severe attacks of sickness, as pneumonia, typhoid, and the like, meat juice affords an extremely nourishing and stimulating article. But it is always understood that the meat from which it is supplied must be of a pure and healthy kind. It is well known that there is much of this meat supply that is not only of a very inferior quality, but much that is positively unfit for all, especially for the sick. For those recovering from sickness it is desirable to have it in a form properly prepared for digestion and assimilation by organs that are especially enfeebled after protracted illness. Valentine's Meat Juice has long been recognized as a preparation, that for quality of the article in its composition, and the care with which it is prepared, is entirely reliable. It is nutritive and stimulant. It has been used with great advantage in the private practice and also in the family of the writer. In addition it has had extensive use in the wards of St. Peter's Hospital, and always with benefit to the patients.

The Seat of Epileptiform Convulsions, Tonic and Clonic. —M. Nino Samoja ("Le Progrès Médical," Nov. 14, 1903) has followed the method of M. Batelli in order to determine the nature of convulsive conditions, as tonic or clonic, which persist after the application of the alterative current, are under the influence of which of the different nerve centers. From these experiments the author draws the following conclusions:

1st.—The cortical motor zone is the exclusive center of clonic convulsions in full-grown dogs and cats. The remainder of the cerebro-spinal axis does, in them, give only tonic convulsions. In the mammiferous species, or mammalia, less elevated in the series of animal life, as rabbits and guinea-pigs, just as in young dogs and cats, and in the green frog, the motor layers is not the center of the convulsions.

2d.—The bulb, or the isthmus of the encephalon, in the guinea-pig and the rabbit is the seat of clonic convulsions. In the guinea-

pig and the green frog the insulated bulb of the encephalon is the seat of the clonic convulsive center.

3d.—The marrow throughout its whole extent in all the mammiferous animals is the seat of a center exclusively tonic; it never causes clonic convulsions. In the green frog the chord provokes, on the contrary, clonic convulsions. It is seen then that the clonic convulsive center goes up progressively in the animal scale, from the marrow to the cerebral meninges; bulbo-medullary in the green frog, bulbar, or basilar, in the guinea-pig and the rabbit, it becomes cortical in the full-grown dog and cat. In man, since in the case of decapitation the trunk presents no sign of convulsions, the seat of tonic convulsions is entirely in the basilar system; that of clonic convulsions is cortical.

BARLOW'S DISEASE.—M. Triboulet, at a meeting of the Société de Pédiatrie, after referring to the usual symptoms of Barlow's disease, and the hesitations and frequent errors in the diagnosis to which this disease so frequently gives rise, especially in its deceptive forms, gave ("Progrès Médical, Jan. 2, 1904) the history of a case which was a long time under observation, one in which no true diagnosis was made. It was the case of a child 23 months old, brought up under very satisfactory conditions, which gradually refused to walk, and cried when it was taken in the arms. They could not find, in any part of the body, a distinctively painful spot; there was no swelling, no deformity appreciable. They at first hesitated as between a mild case of infantile paralysis and the first stage of Pott's disease. Then they considered the possibility of coxalgia, but this was abandoned because there was no distinctive cause. Two surgeons were called afterward, who thought they could find the existence of the early stage of white swelling, and prescribed immobilization. The question was in that condition when the diagnosis was immediately and certainly determined in a most unexpected manner. The mother of the little patient having read in a journal an account of a case similar to that of her child, began to examine the child's gums, and one day found two little spots, to which she immediately called the attention of M. Triboulet at his next visit. Thanks to this discovery of the mother, the disease of Dr. Barlow was immediately recognized, and the success of the treatment soon justified the diagnosis.

HEALING SLUGGISH WOUNDS.—M. Bleck has subjected atonic wounds and other conditions that manifested no disposition to

heal to a very diffuse light, and has observed the good results from the treatment.

SUPPURATION IN THE FRONTAL SINUS.—M. Luc read for the Société de Chirurgie a very interesting communication on the method of Kilian, of Fribourg-en-Brisgau, on the treatment of suppuration of the frontal sinus, which seems to receive to-day the approval of the majority of the rhinologists. The treatment is divided into four principal parts. ("Progrès Médical," Dec. 12, 1904.)

1st.—A curved incision at the lower concavity, descending along the side of the nose.

2d.—Two openings in the bones, one made through the anterior wall of the sinus, and the other separated by a bridge of bone, which forms the superciliary arch.

3d.—Curetting the base through the two openings, and the destruction of the anterior ethmoidal cells.

4th.—Copious washing with oxygenized water, and dusting insufflation with iodoform powder; dressing applying the integuments firmly against the wall of the sinus.

M. Luc has employed this method of Kilian eleven times, and has declared himself to be entirely satisfied. The following are the advantages he has obtained from it:

1st.—A much smaller proportion of relapses: twice only he has been obliged to repeat the operation—it was the first time he employed this process, of which he was not sufficiently familiar with the technical part.

2d.—Diminution, or even total suppression, of the danger of intra-cranial infection (especially of lepto-meningitis foudroyante), because of the destruction of the ethmoidal base, which coexists almost always with the frontal sinus.

3d.—Large communication between the frontal base and the nasal fossa, and assured drainage of the base.

4th.—Less deformity of the patient on account of the preservation of the superior orbital arch.

The only risk or inconvenience arising from Kilian's method of operating is the destruction of the pulley of the grand oblique. M. Luc has observed it only once—with his ninth patient. The accident may arise in exceptional cases, as in abnormal extension of the sinus.

PSEUDO ASTHMA.—M. Hayem has studied pseudo asthma on the principle of auto-intoxication, originating in the stomach and

in reflex gastric causes. He reports ("Le Progrès Médical," Dec. 12, 1903) the case of a patient, who called at his office, with dyspnœa so great that it was feared for a time that he would be unable to resist the movements of the carriage in bringing him to his home. In the examination, M. Hayem was forcibly impressed with a peculiar sound caused by the contraction of the diaphragm. The stomach occupied a large part of the abdomen. Nothing remarkable in the heart, not a murmur in the vessels; thoracic sonority exaggerated; râles sonorous and sibilant abundant.

M. Hayem thought it was a case of pseudo asthma, determined by the mechanical sound of the dilated stomach on the lungs. The treatment was established in consequence: a quart of milk and nutritive injections proved the correctness of the diagnosis.

The course of treatment proved that it was a case of parenchymatous gastritis, which was checked by appropriate treatment, and the patient was finally cured of his pseudo asthma.

La Bronchoscopie.—The following report presented to the Société Médical des Hôpitaux is thus given in "Le Progrès Médical, January 2, 1904:

This session will mark a most important date in the annals of medicine, exhibiting a new and really admirable technic, which was there presented, one which, according to the facts given, will most certainly oblige us to revise the terms of one of the most important organs in our economy—the bronchia. Previous to this successful experiment this location was hidden ground for us. Now, thanks to this new method of exploration by bronchoscopy it has become directly accessible to our senses; it allows us to see not the shadow but the object itself, and at the same time permit us to touch it.

M. Lemoyez has reported a case, which we report here, a case which is the first instance of a foreign body extracted in France from the bronchial tubes by bronchoscopy. The following are the facts in the case.

An upholsterer swallowed a tack which he had held in his mouth. This was followed immediately by a severe attack of coughing with cyanosis and suffocation; calm returned after a time, and the patient was brought to the hospital. There in Laennec the house surgeon supposed that the nail had passed into the digestive tube, and treated the patient on that supposition. But the next day, M. Reclus suspected the presence of a foreign body in the air-

passage, and operated on the patient, under chloroform, according to the method followed in such cases: the body well shaken, the chest pressed and turned in all directions. No result. The patient refused bronchotomy, and went to the Saint Antoine to have the radiograph applied by M. Béclère. This took place on the fourth day after the accident. The result of the examination with the radioscope was as follows: The shadow of a foreign body is distinctly seen verging on the unobstructed field in the right pulmonary region. The form of this shade is that of a nail . . . this nail rises and falls with the movements of respiration; but in efforts to cough it is not seen to move in the trachea. This examination shows:

1st.—The presence of a nail in one of the divisions of the large bronchia on the right side.

2d.—Its envelopment and fixedness in the bronchial canal. The nail is situated opposite the sixth intercostal space, and is a centimeter in length.

M. Lemoyez, associated with M. Béclère, decided to apply, as a test and guide for future action in the use of the new method, recently discovered in Germany, which renders it possible to extract the nail through the natural passage, having it directly under the control of natural sight by means of bronchoscopy.

The operation was commenced by accustoming the patient, by short trials of bronchoscopy superior through the bucco-laryngeal passage. After the fourth session it was possible to introduce a tube, of eight millimeters in diameter, into the right bronchia. At the sixth session this tube penetrated to the depth of thirty-seven centimeters; then the space in which the tube was placed could be distinctly seen as far as the bifurcation of the first right bronchia, where the nail was seen. Here the forceps clicked on the head of the nail, but the electro-aimant, specially constructed, was a little too short to reach it. An attack of coughing followed, and the nail slipped farther down. M. Béclère saw it near the line of the eighth rib, where it entered a distant branch of the bronchia.

Then a few days later in order to allow the use of the bronchoscope farther down a temporary tracheotomy was made, and after allowing the patient to rest for a few days, M. Grisez, the assistant of M. Lemoyez, made a preparatory application of bronchoscopy inferior. Rapidly a tube, ten millimeters in diameter and thirty-five centimeters in length, was introduced. The bifurcation of the bronchia was recognized, the tube penetrated into the right

bronchia and passed on still farther; the interior of a ramification of the first order is seen, the tube then passes into a ramification of the second order; there, at one or two centimeters from the orifice of this latter, M. Grisez sees the head of the nail. He introduces the electro-aimant, and with the first attempt draws out the nail adhering to the magnet.

The whole operation lasted five minutes. The results were excellent.

This sensational communication and the demonstration that was made by M. Kilian, the inventor of the bronchoscope, for directly lighting the bronchial tubes, filled the time of the meeting. It is a marvel of simplicity and ingenuity.

EXODIN, A NEW PURGATIVE.—Professor Wilhelm Ebstein described to the Göttingen Medical Society, December 3, 1903 ("Deutsche Medizinische Wochenschrift," Jan. 1, 1904) a new purgative—Exodin:

"Exodin, the diacetylrufigallic-acid-tetramethyl-ether, is a yellow powder, melting at 180° to 190° C. It is odorless and tasteless, insoluble in water, and with difficulty dissolved in alcohol. Since January 13, 1903," he said, "I have experimented with it very extensively in the university and in my private clinic as well as in consulting practice. The remedy never causes unpleasant by-effects, such as dyspeptic symptoms or eructations. It usually acts in from 8 to 12 hours. The unpleasant diarrheal discharges produced by many otherwise effective purgatives are absent with Exodin. In most cases the first passages are mushy, and even solid. In the course of the next few hours there are usually from one to three more passages, the last being not infrequently thin. The fæces preserve their natural color. In extremely rare cases the first evacuations are diarrheal; entirely watery discharges were hardly ever observed. Once in a while the remedy may be ineffectual, but this is wholly exceptional.

"The action of Exodin is midway between laxative and purgative. It can be used as an evacuant in simple constipation in otherwise healthy persons, and also when sluggishness of the bowels is an accidental complication or a part of some other affection. In pregnancy, even during the first two months, Exodin has, when all other laxatives failed, proved very efficacious and harmless, effecting evacuation of abundant stools without any trouble. The use of the drug at intervals showed that it is always equally active whenever readministered.

"Too much must not be demanded of Exodin. We cannot expect the intestines to react at once to the purgative in cases of old chronic coprostasis, which is kept up by hard and dried scybalæ accumulated in the large intestines; or in spastic constipations in which the spasm of the intestinal muscles prevent defecation; or where paralytic conditions cause the retention. When the intestinal canal is weakened, its refusal to perform its functions becomes more and more obstinate as we irritate it, either by large doses of mild purgatives or by the always reprehensible method of employing so-called drastic evacuants.

"Patients suffering from the severest forms of chronic constipation, who had tried all possible remedies, and whose judgment was unimpeachable, preferred Exodin on account of its prompt, painless and efficient action to all other medicaments.

"Exodin is marketed in the form of 7½-grain tablets, which are tasteless and odorless. One tablet is enough for children. Adults take from one to three tablets; two, however, are usually sufficient to produce one or several mushy stools within 8 to 12 hours. The tablets should be allowed to disintegrate in a suitable quantity of water and the mixture drunk under constant stirring with a spoon. Any Exodin remaining in the glass should be rinsed down with additional water. This method insures the introduction of the remedy into the stomach in the finest possible state of subdivision."

Local Anæsthesia.—F. Gregory Connell, Surgeon to St. Vincent's Hospital, Leadville, Col. ("Annals of Surgery," Dec. 1903), after discussing the unsatisfactory effects of other local anæsthetics, particularly commends the use of Beta-Eucaine. In a series of over 80 cases in which he used this remedy, it was most effectual and without any untoward results whatever. Beta-Eucaine has for its most characteristic and advantageous features the following: (a) Non-toxicity, the fatal dose being between 6 and 7½ grains per 2 1-5 lbs. of body weight; there is practically no possibility of such a dose being injected in the course of an ordinary anæsthesia. (b) It may be sterilized by heat without the loss of any of its properties. (c) It will not deteriorate or decompose with keeping, and (d) it will not increase the tendency to hemorrhage to any marked degree; vasomotor paralysis and secondary hemorrhage occur less frequently than with cocaine. These points have been most influential in placing Beta-Eucaine as the local anæsthetic of choice, and its use is being rapidly increased.

THE COUGH-SEQUELA OF LA GRIPPE.—Dr. John McCarty, of Briggs, Tex. (Louisville Medical College), in giving his personal experience with this condition, writes as follows: "Ten years ago I had la grippe severely, and every winter since; my cough has been almost intolerable. During January, 1902, I received a sample of Antikamnia and Heroin Tablets, and began taking them for my cough, which had distressed me all winter, and as they gave me prompt relief I ordered an ounce box, which I have since taken with continued good results. Last fall I again ordered a supply of Antikamnia & Heroin Tablets, and I have taken them regularly all winter and have coughed but very little. I take one tablet every three or four hours, and they not only stop the cough, but make expectoration easy and satisfactory.

COCAINE IS NOT COCA.—Vin Mariani was used by the profession fully twenty years before cocaine was known in medicine. In fact, through this preparation physicians were made familiar with the properties of Coca, and this was the original and only available form of employing the remedy. The popularity of Vin Mariani has led imitators to foist upon the profession artificial substitutes concocted by adding cocaine to wine. Such base frauds masquerading as Coca Wine—a title originated by M. Mariani—have done great evil and tend to unjustly cause condemnation of all Coca preparations as but false products.

Evils resulting from substitution and imitation of Vin Mariani, and the abuse occasioned by these false concoctions, have led to the introduction of State laws restricting the sale of cocaine and of cocaine preparations. Mariani & Co. are heartily in accord with such humane legislation, and as manufacturers of the standard and original Coca Wine, urge official analysis of their preparation as testimony of the confidence reposed in them by the medical profession, who have long recognized the worth of Vin Mariani, and who continue to prescribe it. It is but just to emphasize these truths and explain the difference between a true Coca Wine and base and dangerous impositions fortified by adding free cocaine.

THE POMEROY FRAME TRUSS.—The Pomeroy Frame Truss is automatically correct, as it restrains the abdominal viscera in a manner corresponding exactly to nature's method in the normal man.

It is not natural to have an active spring pressure concentrating its energy on that point of the abdominal wall which the presence

of a hernia indicates as being already weak. Such active pressure is necessarily given by either a spring or an elastic truss.

The frame truss is a strip of rigid metal carefully fitted so as to conform to the entire contour of the body, on a line passing above the pubes, rising to just below the anterior iliac spine and then girdling the hips to the upper margin of the gluteal muscles. It provides a sort of artificial pelvis that will not slip out of place from any movement of the body. A pad interposed between the frame and the body at the point where resistance is needed, restrains the abdominal contents in a manner similar to the structures of the normal man.

The hernia is controlled by resistance, not forced in by pressure; and this control is absolute.

A water pad is used as the movement of the fluid allows it to conform to the surface against which it lies, and its resistance is positive, water being incompressible.

---

ALCOHOL FIGHT SUCCEEDS.

Oppenheimer Institute Commission Meets with Much Support in England.

[*Special Cable to the Herald.*]

London, Saturday.—I am asked to state that the Commission recently sent to England by the Oppenheimer Institute of New York, which numbers among its advisory directors Secretary Shaw, Dr. Lyman T. Gage, Senators Hanna and Depew and Bishop Potter and Dr. Parkhurst, has been very successful in its propaganda here.

Lady Henry Somerset, whose interest in temperance work is well known, has written a circular letter to the press indorsing the work done by the charity department of the Institute in the treatment of destitute cases of alcoholism and speaking highly of the results obtained by Dr. Isaac Oppenheimer at a London hospital, where for a couple of months past he has been treating test cases.

Dr. J. E. Price, of New York, recently appeared before the London County Council Inebriates Acts Committee, which supervises the Farmfield Reformatory, where £250,000 ($1,250,000) has been expended. He offered to treat free a hundred test cases gathered from prisons. His proposition is now under consideration.

# EDITOR'S TABLE.

SANITARIAN, MARCH, 1904.

**All Communications, business and otherwise, all exchanges and all publications for review should be addressed to the Editor, Dr. A. N. Bell, 337 Clinton Street, Brooklyn, N. Y.**

## MORTALITY AND MORBIDITY REPORTS AND REVIEWS.

BELL, JULIA ANN (HAMLIN), wife of Dr. A. N. Bell, died, at her home, 337 Clinton St., Brooklyn, N. Y., March 7, 1904, in the 84th year of her age.

"Her children rise up, and call her blessed;
Her husband, also, and he praiseth her, saying:
Many daughters have done virtuously,
But thou excellest them all."

## TO-DAY.

Life is a battle, and the strife
Ends only with our earthly life.
The bugle call is in the air;
The rush, the conflict, everywhere;
And none but cowards fail to share
In all that makes us what we are.
The forward march, the certain trend,
Of all things to some unseen end—
In vain we seek to turn aside
The onward sweep of that great tide
That bears us to our destiny.
There is no hope, there is no rest,
For those who fail to do their best;
Peace only comes to those who see
That they keep step in harmony
With all that is, or yet may be.

E. A. BRACKETT.

Winchester, Mass.

STATE OF NEW YORK.—Monthly Bulletin, Department of Health, for December, 1903, 7,614,281: Total number of deaths, 11,075; annual death rate, 17.1; deaths under 5 years, 2,009; percentage of deaths under 5 years to total deaths, 18.2; deaths at 70 years and over, 2,174; deaths from zymotic diseases per 1,000 deaths from all causes, 90; from cerebrospinal meningitis, 41; typhoid fever, 137; malarial diseases, 9; smallpox, 2; scarlet fever, 103; measles, 50; erysipelas, 44; whooping-cough, 40; croup and diphtheria, 314; diarrheal diseases, 279; acute respiratory diseases, 2,051; consumption, 1,152; puerperal diseases, 84; diseases of the digestive system (not acute diarrhea), 582; diseases of the urinary system, 914; diseases of the circulatory system, 1,250; diseases of the nervous system, 1,182; cancer, 478; accidents and violence, 595; old age, 400; not classified, 1,368.

*The Principal Causes of Death for the Year.*—There have been reported during the year, including 578 delayed returns received after the issue of the Monthly Bulletin, 127,100 deaths during the year, which makes a mortality per 1,000 population of 16.7. While the total mortality is about 3,000 greater than that of last year, the estimated increase in population reduces the death rate from that of 17.0 per 1,000. The increase occurred for the most part in the cold weather months, but the deaths of July were a little greater than last year, which was unusually low; it is, however, below the average of this midsummer month. The November mortality was, on the other hand, unusually high, for while this month has usually the lowest mortality of any in the year, it was, this year, 1,000 greater than in 1902, and exceeded the reported mortality of September and October. The increase was chiefly in acute respiratory and other local diseases.

The *infant mortality* exceeded that of 1902 by 1,500, but it was exceptionally low last year, and it is still 4,000 less than the average. In some years there have been 10,000 more deaths under 5 years of age than were reported this year. The 22,000 at age of 70 and over constitute the same percentage of the entire mortality as in 1902, 17 per cent. of all deaths.

*Zymotic diseases* caused one-eighth of the mortality of the year, against 14.0 per cent. last year, and is as low as has ever appeared in past years, the range having been from 12.0 to 22.0 per cent. of all deaths.

Smallpox caused 41 deaths, all but 16 occurring in and about Rochester. Most of the deaths occurred in the first half of the year. After general quiescence during the summer it recurred in

the fall pretty widely, the chief centers being, at the end of the year, in Chautauqua and Cattaraugus counties, where it has been very general for a long time; in Orleans, Niagara and Wayne counties and in the region about northern Saratoga County. Limited outbreaks have occurred in numerous other localities. The Southern tier, east and west central districts have alone been free from fatalities from smallpox.

There were 10,250 deaths from *pneumonia* and 7,960 from Bright's disease. The acute respiratory mortality was about the average. *Grippe is* estimated to have caused 8,000 deaths, and its annual recurrence is apparent during the closing weeks of the year.

New York City, 3,732,903. Total number of deaths, December, 5,914—annual death rate, 18.6: Borough of Manhattan, 1,917,676; deaths, 3,145—death rate, 19.4. Borough of the Bronx, 268,341; deaths, 476—21.0. Borough of Brooklyn, 1,219,597; deaths, 1,988—18.1. Borough of Queens, 182,681; deaths, 202—13. Borough of Richmond, 72,608; deaths, 103—16.7.

THE LATE DR. CYRUS EDSON.—At a meeting held January 12, 1904, the Medical Board of the Willard Parker and Riverside Hospitals adopted a resolution to the effect that "In the death of Dr. Cyrus Edson the profession has lost a broad-minded physician and a progressive and scientific sanitarian, who labored with tireless energy, intelligent effort and marked executive ability in the office of Commissioner of Health and the subordinate offices in the Health Department which he held before he attained the commissionership." And also that "The Medical Board holds in affectionate remembrance the uniform courtesy and kindness of which each of the visiting staff of these hospitals was the recipient during Dr. Edson's administration of the Health Department. Ever ready to discuss projects for the welfare of the hospitals, he gave them full consideration and approval, if possible, and the aid of his executive power in their accomplishment."

## DRINK PILES WORK ON COURTS.

### Magistrates Report that of 22,152 Additional Arrests Last Year, 18,770 Were for Intoxication.

The Board of City Magistrates of the Boroughs of Manhattan and the Bronx has prepared its annual report for 1903. Acting President Baker signs the report, with Philip Bloch as Secretary.

In 1902 the total fines collected were $84,065.05, and in 1903, $83.133.50, a decrease of $931.55.

The board recommends the following in reference to corporation ordinances: "We renew the recommendations made last year giving the Magistrates specifically the power to impose a fine for violation of corporation ordinances, and in default to commit the offender in default of payments thereof not exceeding ten days. The summary powers of conviction vested in the Magistrates in minor violations of the Sanitary Code has been found to be a public benefit."

The Board recommends a new building for the Essex Market Court.

The increase over last year in arrests is 22,152, of which increase the offences of disorderly conduct and intoxication furnish 18,770; violation of corporation ordinances, 1,241; disorderly house keeping, 304; gambling and gambling house keeping, 86; and violation of the liquor tax law, 3,168. There is a decrease in burglaries of 185; grand larceny, 159; homicide, 42; insanity, 66; vagrancy, 850; petit larceny, 94, and violation of the lottery law, 77.

The Board, in reference to probation cases, says:

"The probation law continues to work out satisfactory results, and the officers that find it their duty are doing faithful and conscientious work. The beneficence of the law was enjoyed by 2,708 individuals, of whom 2,054 were males and 654 were females. At the end of the year 848 cases were still open and pending."

CALIFORNIA.—San Francisco. Plague is still present, 3 cases having occurred since January 1st, to date, February 12, 1904.

Los Angeles, 135,000. Health report for January: Deaths, 291—41 under 5 years; death rate, 21.72. From specific infectious diseases, 74; tuberculosis, 64—"14 had lived here less than three months, 3 between three and six months, 5 between six and twelve months, 15 between one and five years, 5 between five and ten years, 17 over ten years, unknown 1, life 3."

COLORADO.—Denver, 175,000. Report for November: Deaths, 245; premature and still births, 9. Death rate, per annum, 16.80. Deaths from phthisis, 60—57 contracted elsewhere; typhoid fever, 75 cases, 16 deaths; smallpox, 3 cases; chickenpox, 1 case; diphtheria, 49 cases, 2 deaths; scarlet fever, 57 cases, 1 death; measles,

41 cases; whooping-cough, 1 case. Deaths from heart diseases, 17; pneumonia, 23; bronchitis, 2; nephritis, 8; cancer, 5.

CONNECTICUT.—Bulletin for December: Deaths, 1,322—151 more than in November, and 24 more than in December of last year, and 128 more than the average number of deaths in December for the five years preceding. The death rate was 18.0 for the large towns; for the small towns, 14.0; for the whole State, 17.0. Deaths reported from infectious diseases, including diarrhea, 243 —18.3 per cent. of the total mortality.

Cases of infectious diseases reported: Smallpox, Newington, 2; measles, 1,722 cases in 63 towns; scarlet fever, 164 in 39 towns; diphtheria and croup, 152 in 30 towns; whooping-cough, 55 in 8 towns; typhoid fever, 65 in 29 towns; consumption, 22 in 6 towns.

DISTRICT OF COLUMBIA, 300,902—91,603 colored. Report for the week ended February 6: Deaths, 118—18 under 5 years. Death rates, 18.4 for the whites, 24.9 for the colored, and 20.4 for the entire population. The prevailing causes of death were: pneumonia, 17; consumption, 21; diseases of the kidneys, 8; apoplexy, 5; diseases of the heart, 15.

Cases of typhoid fever continue to diminish. At the close of the week there were 24 cases; 1 new case was reported. Scarlet fever has increased from 58 cases last week to 65 now under treatment.

ILLINOIS.—Chicago. Statement of mortality for the month of January, 1904, compared with the preceding month, and with the corresponding month of 1903. Death rates computed on estimated figures of midyear populations of 1,950,000 for 1904, and of 1,820,000 for 1903:

| | Jan., 1904. | Dec., 1903. | Jan., 1903. |
|---|---|---|---|
| *Total deaths all causes..... | 2361 | 2354 | 2573 |
| Annual death rate for 1,000.. | 14.24 | 14.69 | 16.07 |
| Under 1 year..... | 439 | 400 | 457 |
| Between 1 and 5 years..... | 180 | 214 | 248 |
| Over 60 years..... | 533 | 537 | 541 |
| Important causes of death: | | | |
| Acute intestinal diseases..... | 83 | 81 | 84 |

*Deaths resulting from the Iroquois Theater fire not included in this total. Returns not yet received from coroner's office.

| | | | |
|---|---|---|---|
| Apoplexy | 64 | 62 | 61 |
| Bright's disease | 156 | 166 | 139 |
| Bronchitis | 123 | 101 | 121 |
| Consumption | 248 | 228 | 252 |
| Cancer | 85 | 82 | 92 |
| Convulsions | 59 | 67 | 44 |
| Diphtheria | 40 | 59 | 39 |
| Heart diseases | 205 | 191 | 197 |
| Influenza | 22 | 13 | 9 |
| Measles | 1 | 7 | 26 |
| Nervous diseases | 95 | 120 | 120 |
| Pneumonia | 504 | 498 | 479 |
| Scarlet fever | 15 | 17 | 40 |
| Smallpox | 1 | 0 | 4 |
| Suicide | 31 | 42 | 34 |
| Typhoid fever | 30 | 36 | 97 |
| Violence (other than suicide). | 110 | 124 | 131 |
| Whooping-cough | 1 | 5 | 39 |

### *Public Water Said to be Bad.*

Investigation by the State Board of Health has disclosed the fact that the public water supply in a number of Illinois cities is dangerous. The board is now nearing its completion of the collection of samples of city water supply in every municipality of the State in excess of 2,500 population. Not all the samples have been analyzed, but this portion of the work will be disposed of in a short time.

In Pontiac the water supply was found to be slightly polluted. Action was taken by the State board, and the local board was directed to order the removal of an intake which was found to be the source of trouble. Mayor S. A. Rathbun has written Secretary Egan, of the State board, that the change has been made as ordered, and expresses the belief that without the action of the State board the water company could not have been prevailed upon to act except by resort to the court. Similar cases have developed at several other points.

Dr. E. F. Baker, Medical Inspector for the State Board of Health, reports to Dr. J. A. Eagan, Secretary of the State Board of Health, from Sandoval, Marion County, that there are twenty-five cases of smallpox in the village, and a number in the county surrounding Sandoval; also, several cases at Odin, in the same county.

Doctor Baker is there, taking steps to check the spread of the disease.

*Smallpox in Sangamon County.*—Several cases of smallpox were reported by Dr. J. W. Robinson, of Berlin, Sangamon County. The cases are all in one family and under a strict quarantine. One case is reported from Island Grove.

Inspectors from the State Board of Health have returned from a visit to Canton, Fulton County, where an outbreak of typhoid fever was reported. They report that only a few cases exist and there seems to be no danger of a further spread. Over one hundred cases of typhoid fever occurred in Canton in December. As soon as the State Board of Health was advised of the outbreak an investigation was made and the water of the city analyzed; it was found that the disease was caused by water from a factory well. The well was ordered closed, and since then no cases have developed, except in families originally infected.

Dr. J. A. Eagan, Secretary of the State Board of Health, has been appointed Chairman of the Committee on Typhoid Fever of the Conference of State Health Officers, and the United States Public Health Service, by Supervising Surgeon-General Walter Wyman. The other members of the committee are Dr. Samuel A. Abbott, Secretary State Board of Health of Massachusetts; Dr. William C. Woodward, Health Officer, District of Columbia; Dr. J. S. Fulton, Secretary State Board of Health of Maryland, and Dr. J. N. Hurty, Secretary State Board of Health of Indiana.

The Illinois State Poard of Health is now preparing rules and regulations concerning the prevention and suppression of typhoid fever. These will be formally adopted by the State Board of Health at the annual meeting next week. Copies of these rules will be sent to all newspapers in the State, and to every county, township, village and city health officer. Copies of the rules will be distributed among the people by the local health officers.

INDIANA.—The monthly report of the Indiana State Board of Health says: Measles was reported from all parts of the State in December. There were 9 deaths and the lowest estimate of cases is 10,000. Tonsillitis was second in prevalence, many of the cases, no doubt, being diphtheria. Pneumonia was third in prevalence, then rheumatism, bronchitis, influenza, smallpox, scarlet fever, typhoid fever, diphtheria and diarrhea in the order named.

*Smallpox*—523 cases, with 2 deaths, in forty counties was re-

ported. In the corresponding month last year there were reported 642 cases, with 17 deaths, in forty counties. Almost one-half of the cases—212 in number—were reported from Clay County. The first marked epidemic of smallpox occurred in Clay County four years ago, and despite many deaths and a great number of severe cases, it has been impossible to secure general vaccination.

*Tuberculosis.*—The deaths in this month numbered 371, a rate of 173.9 per 100,000. In the same month, a year ago, the deaths numbered 319—rate, 149.5.

*Typhoid fever* caused 65 deaths. In the same month, last year, 91 deaths were reported; 58 of the 92 counties reported the disease present—701 cases in all.

*Pneumonia* caused 392 deaths—rate, 183.8 per 100,000. In the same month, last year, 267 deaths were reported, a rate of 125.1. The city rate was 275.1; the county, 136.5.

By other causes than above the deaths were: Diphtheria, 54; scarlet fever, 34; diarrheal diseases, 23; cerebrospinal meningitis, 34; influenza, 35; puerperal fever, 10; cancer, 91; violence, 153.

IOWA.—State Board of Health Bulletin for January reports outbreaks of infectious diseases for the preceding month: Diphtheria, 9 localities; scarlet fever, 40 localities; measles, 2 localities; whooping-cough, Des Moines; chickenpox, Webster City; smallpox, 11 localities.

LOUISIANA.—New Orleans, 317,000—84,000 colored. Report for January, 1904: Total deaths, 448 white, 285 colored—733; deaths under 5 years—white 90; colored, 48. Death rates: Whites, 23.07; colored, 40.71 : 27.74. Deaths from typhoid fever, 7 white, 2 colored; influenza, 22 white, 22 colored; tuberculosis of the lungs, 56 white, 44 colored; pneumonia, 65 white, 54 colored; Bright's disease, 26 white, 12 colored; cancer, white 19, colored 5; senile debility, white 27, colored 13.

MICHIGAN.—There were 3,126 deaths reported to the Secretary of State for the month of January, corresponding to a death rate of 14.7 per 1,000 population. The number was 184 larger than that registered for the preceding month, and is also greater than the number for January, 1903.

By ages there were 490 deaths of infants under 1 year of age, 210 deaths of children aged 1 to 4 years, and 982 deaths of elderly

persons over 65 years of age. The age distribution was practically the same as for the preceding month.

Important causes of death were as follows: Pulmonary tuberculosis, 176; other forms of tuberculosis, 25; typhoid fever, 57; diphtheria and croup, 83; scarlet fever, 34; measles, 12; whooping-cough, 19; pneumonia, 412; influenza, 101; cancer, 134; accidents and violence, 180. There was 1 death from smallpox, which occurred in Kalkaska County.

MINNESOTA.—Minneapolis, 240,000. Report for December: Deaths, 217—28 under 5 years. Annual death rate for twelve months ending December 31, 9.86. Deaths from typhoid fever, 8; consumption, 27; cancer, 16; organic heart disease, 18; other diseases of the circulatory system, 3; pneumonia and bronchopneumonia, 23; Bright's disease, 12.

St. Paul, 180,000. Report for December: Deaths, 127—39 under 5 years; death rate, 8.46. Deaths from consumption, 11; pneumonia, 15; cancer, 8; typhoid fever, 3; scarlet fever, 2.

MISSOURI.—St. Louis, 645,000. Report for December: Deaths, 1,043—207 under 5 years; annual death rate, 19.35. Deaths from zymotic diseases, 117; scarlatina, 15; diphtherian croup, 28; whooping-cough, 2; typhoid fever, 31; remittent fever and congeners, 5; diarrheal diseases under 5 years, 12; cancer, 50; phthisis, 97; bronchitis, 42; pneumonia, 156; other diseases of the respiratory organs, 40; diseases of the circulatory system, 95; Bright's disease and nephritis, 54; accident, 46.

NEW JERSEY.—Hudson County (Jersey City and environs), 421,692. Report for December: Deaths, 694—158 under 5 years; death rate, 19.7. Deaths from croup, 9; diphtheria, 18; scarlet fever, 8; whooping-cough, 2; typhoid fever, 4; all zymotic diseases, 55; phthisis, 79; bronchitis, 18; pneumonia, 123; cancer, 16; violence, 43; still births, 60.

Newark, 272,000. Report for the week ended February 6: Deaths, 134—37 under 5 years; death rate, 25.61. Deaths from contagious and infectious diseases, 30; diphtheria, 3; consumption, 15.

NORTH CAROLINA.—Bulletin of mortality for December summarizes reports of 28 towns, with aggregate population 172,100: white, 100,750; colored, 71,350; deaths, respectively, 116, 136:

252; death rates, 12.8, 22.9: 17.6. Deaths: from consumption, white, 16, colored, 14: 30; heart diseases, white, 14, colored, 7: 21; diarrheal diseases, white, 3, colored, 7: 10; typhoid fever, white, 1, colored, 5: 6; deaths under 5 years, white 18, colored, 48: 66; still born, white, 8, colored, 16: 24.

OHIO.—Cleveland, 420,000. Report for December: Deaths, 554—151 under 5 years; annual death rate, 15.2. Deaths from typhoid fever, 28; diphtheria and croup, 10; tubercle of lungs, 51; pneumonia, 53; broncho-pneumonia, 16; cancer, 13; heart diseases, 32; Bright's disease, 20; diarrhea and enteritis (under 2 years), 13; early infancy congenital icterus, debility, etc., 43; senile debility, 17; still births, 44.

For the year 1903 there were reported: Total deaths, 6,799—2,285 under 5 years of age; death rate, 16.18. Deaths from typhoid fever, 472; diphtheria and croup, 204; consumption, 559; pneumonia, 539; broncho-pneumonia, 130; cancer, 228; organic heart disease, 274; Bright's disease and nephritis, 281; diarrhea and enteritis (under 2 years), 408; congenital debility, 502; senile debility, 256; violence, 518; still births, 467.

PENNSYLVANIA.—Philadelphia, 1,378,624. Report for week ended January 30: Deaths, 562—159 under 5 years; annual death rate, 20.76. Deaths from apoplexy, 18; Bright's disease, 42; consumption, 56; diphtheria, 11; diseases of the heart, 41; typhoid fever, 10; nephritis, 44; pneumonia, 66; cancer, 21; *smallpox*, 17.

Pittsburg, 354,000. Report for the week ended January 30: Deaths, 127—45 under 5 years; annual death rate, 18.65. Deaths from diphtheria and croup, 2; whooping-cough, 3; typhoid fever, 13; tuberculosis, 5; pneumonia, 26; bronchitis, 3; cancer, 3.

### *Pittsburg's Unenviable Typhoid Record.*

A comparative list of typhoid mortality of all cities in the United States of over 30,000 population, for the years 1888-1891, inclusive, shows Pittsburg to be at the head of the list for that period, and Allegheny fourth. In the report of the joint commission in 1894 a table of typhoid fever mortality for the five years, 1888-1892, showed Allegheny at the head of the list and Pittsburg fourth. The two cities showing as great a mortality as that of Pittsburg in this table were Lowell and Lawrence, which have

since applied the remedy. The census of 1880 showed the typhoid fever rate per 10,000 population to be greater in Pittsburg than in any other city in the United States, Nashville being then a close second. These statistics leave no doubt of the fact that Pittsburg has, for a quarter of a century, suffered more from typhoid fever than any other city in the country.—"Pittsburg Despatch."

WASHINGTON.—Seattle, 135,000. Report for January: Deaths, 88—16 under 5 years; annual death rate, 7.80. Deaths from tuberculosis, 12; typhoid fever, 3; diphtheria, 2; organic heart diseases, 7; Bright's disease, 2; cancer, 3; pneumonia, 7.

WISCONSIN.—Milwaukee, 315,000. Report for December: Deaths, 321—100 under 5 years; annual death rate, 11.94. Deaths from typhoid fever, 4; diphtheria and croup, 8; phthisis, 26; pneumonia and broncho-pneumonia, 42; bronchitis, 13; cancer, 19; organic heart disease, 36; diarrheal diseases, under 2 years, 5; Bright's disease, 18; congenital debility, 28; senile debility, 8; violence, 15; suicide, 2; accidents, 13.

*Changes in the State Board of Health.*

At the annual meeting, January 27, 1904, Dr. C. A. Harper, of Madison, was elected secretary, to succeed Dr. U. O. B. Wingate, of Milwaukee. The office of the secretary will be removed from Milwaukee to Madison, April 1, 1904, and on and after that date all communications intended for the State Board of Health should be addressed to Dr. C. A. Harper, Secretary, Madison, Wis.

The members of the Board at the present time consist of the following:

Wm. F. Whyte, M.D., President, Watertown, Wis.; Q. O. Sutherland, M.D., Janesville, Wis.; F. C. Suiter, M.D., La Crosse, Wis.; Hasso A. Meilike, M.D., Clintonville, Wis.; L. E. Spencer, M.D., Wausau, Wis.; U. O. B. Wingate, M.D., Milwaukee, Wis.; C. A. Harper, M.D., Secretary, Madison, Wis.

PHILIPPINES.—Manila, 19,941. Report for August, 1903: Population of Manila: Americans, 4,389; Filipinos, 189,782; Spaniards, 2,528; other Europeans, 1,117; Chinese, 21,230; all others, 895—total, 219,941.

Deaths from all causes, 862—527 under 5 years. Aggregate annual death rate, 46.17. Americans, 6, death rate, 16.11; Filipinos, 848, death rate, 50.15; Spaniards, 5, death rate, 23.31;

other Europeans, 2, death rate, 21.09; Chinese, 41, death rate, 22.75.

Deaths from typhoid fever, 7; intermittent fever and malarial cachexia, 26; cholera, 63; dysentery, 8; plague, 8; other epidemic infections, 23; tuberculosis of the lungs, 60; eclampsia (non-puerperal), 48; convulsions of children, 221; bronchitis, 32; diarrhea and enteritis, 90; cancer, 1; pneumonia, 5.

PORTO RICO, 953,243.—Report for December: Deaths, 1,868—700 under 5 years; annual death rate, 23.5. Still births, 134; cerebrospinal fever, 10; diphtheria, 2; typhoid fever, 4; pneumonia, 46; puerperal fever, 12; diarrheal diseases, 17; anæmia, 455; bronchitis, 59; heart diseases, 20; tuberculosis, 172; diseases of the nervous system, 27; violence, 12; undefined diseases, 1,016.

BUENOS AYRES, 891,834. Report for November: Total deaths, 1,500—715 under 5 years of age; annual death rate, 20.18. Deaths from typhoid fever, 12; smallpox, 55; measles, 12; scarlet fever, 7; croup and diphtheria, 10; consumption, 158; cancer, 81; meningitis, 116; organic diseases of the heart, 48; pneumonia and broncho-pneumonia, 228; diarrheal diseases, 178; Bright's disease and nephritis, 59; violence, 45.

## THE ISTHMUS.

Washington, Feb. 28.—Surgeon J. C. Perry, of the Public Health and Marine Hospital Service, who, since last month, has been at Colon making a special study for President Roosevelt of the sanitary conditions on the Isthmus, has submitted an exhaustive preliminary report to Surgeon-General Wyman. He devotes the greatest portion of his report to the City of Colon, but also describes conditions at Panama and along the proposed route of the Isthmian Canal.

His conclusions are, in the main, most hopeful. He describes the present condition of Colon as woefully unsanitary and unhealthy, and says that its redemption will be an immense task, but that it should be successful. The climate at the camps along the route of the canal he described as far superior to that of Colon and Panama, and he says that with proper sanitary regulations, the health of their occupants should remain good.

## TUBERCULOSIS IN ENGLAND.

Dr. Arthur Newsholme, Medical Health Officer of Brighton, gives, in the "Journal of Hygiene," October, 1903, statistical tables from 1850 to 1900. From 1851 to 1865 the death rate was greater among females than males, the difference between the sexes gradually diminishing, however. Since 1865 the death rate has been greater among males, and increasingly so each year.

Since 1881 the death rate from phthisis has declined for males 18.2 per cent., for females 36 per cent.

Other tubercular diseases during the same period have declined for males 20 per cent., for females 17 per cent. The reasons given for this general diminution in the death rate from tuberculosis are improved house construction, improved habits of the people, diminished overcrowding, improvement in quality and quantity of food, and improved industrial conditions. Noting these facts it can easily be understood why the death rate among women has diminished more than among men, viz., the great improvement in the home and its environment.

The fact well known to all close observers that poverty and tuberculosis are close companions is dwelt upon, and the true reason given, viz., that poverty increases the closeness of contact and the frequency of opportunity for infection.

Steps are being taken in some parts of England to secure the notification of all classes of tuberculosis. Voluntary notification has been in force in Brighton four and a half years. Associated with such notification is the following procedure: A history of each case is secured, with the duration and source of infection, place of residence during illness, occupation and work places during the preceding five years, spitting habits, etc. Provision is made for the thorough cleansing and disinfection of all patients' rooms. The patients are instructed in precautionary methods: if poor they are given spit-cups for out-door use, and Japanese paper-handkerchiefs for indoor use. If lodged under favorable conditions, especially if there is danger of infection to others, the patient is sent to the Municipal Sanatorium for one month, even though there may be no hope of recovery. This one month's residence in a sanatorium is of benefit in three ways: the patient is improved and given a new start, the house can be thoroughly cleansed and disinfected, and the patient will have learned in the sanatorium how to care for himself and how to protect others.

The point is well made by the author that the educational aspect of sanatorium treatment is of as great, if not even greater importance than the curative aspect.

The point is made in closing that there should be provision made by law for the care of the advanced as well as the early tubercular cases; that much good can be done through combined public and private enterprise and that there should also be sanatoria for pay patients.

The author draws attention to the fact that in Sheffield there is now an ordinance (passed in 1903) compelling the reporting of all tuberculous cases, and directing sanitary procedures.

## THE HEALTH OF LONDON.

Official report for 1903, as summed up by "The Sanitary Record," January 14, in London, with a population of more than four million and a half—There were in all 72,082 deaths during the twelve months, closing the year with the Saturday after Christmas. This number is 15,020 fewer than the average of the last ten years, and is 8,960 fewer than in 1902, which was also a healthy year. It is 16,132 fewer than in 1899, when the population was considerably less. In the last six years there have been 38,590 fewer deaths than the average—a fact probably very intimately associated with the mild winters of recent years. The average death rate for the year of every 1,000 was 15.6, while in 1902 it was 17.8; in 1901, 17.4; in 1900, 19.2, and in 1899, 19.5. There was not a single week during the year with the death rate in excess of the average—a feature which has certainly not occurred in recent years.

The first quarter of the year had the largest number of deaths, there being in London 20,393, which, however, was 4,391 fewer than the average of the last ten years, but the death rate per 1,000, 17.7, was far higher than in any other period of the year. The largest number of deaths occurred in the week ending January 24th, when the total was 1,848, which was only 25 less than the average. There were in the quarter 652 deaths from measles, 761 from whooping-cough, and 4,013 from diseases of the respiratory system. In the second quarter there were 17,054 deaths, which is 3,091 fewer than the average, and the death rate per 1,000 was 14.8. The period was healthy throughout, there being no week with fewer than 132 deaths below the average, while in several weeks the deficiency exceeded 300. There were during the quarter 794 deaths from measles, 479 from whooping-cough,

and 2,747 from diseases of the respiratory system. The deaths from diarrhea and dysentery were 266, being precisely similar to the number from the same cause during the first quarter of the year. For the third quarter the number of deaths amounted to 16,175, which is 4,884 fewer than the average, and the rate per 1,000 was 14.0, which is lower than any other quarter. For each of the weeks ending August 1st and August 8th there were over 600 fewer deaths than usual, the number in the last-mentioned week being 685. During the quarter there were 276 deaths from measles, 230 from whooping-cough, 1,615 from diarrhea and dysentery, and precisely the same number—1,615—from diseases of the respiratory system. The fourth quarter had 18,460 deaths, which is 2,654 fewer than the average, and the death rate per 1,000 was 16.0. The number of deaths fewer than the average exceeded 100 in each week throughout the period, and in the closing week, ending December 26th, was 553. There were in the last quarter 327 deaths from measles, 187 from whooping-cough, 804 from diarrhea and dysentery, and 1,875 from diseases of the respiratory system. For the 76 great towns, with an aggregate population of more than 15,000,000 in the middle of 1903, the death rate for the year was 16.2 for every 1,000 persons living, which is 0.6 higher than the rate for the year in London.

## OPPENHEIMER INSTITUTE.

### Annual Meeting and Election of Officers and Directors.

The annual meeting of the stockholders of the Oppenheimer Institute was held in Jersey City, January 22d. Ninety per cent. of the stock was represented. Congressman W. H. Jackson, of Salisbury, Md., and Charles Evans, President of the Atlantic City Bank, were elected members of the board of directors, in the places of Daniel Appleton and George S. Davis, resigned. The present directors are: James H. Alexander, formerly vice-president Standard Oil; Jose Aymar, lawyer; Leroy W. Baldwin, President Empire State Trust Company, Manhattan; Archer Brown, of Rogers, Brown & Co.; Charles R. Brown, banker; A. H. DeHaven, New York Stock Exchange; Charles Evans, President Atlantic Bank; Sylvester T. Everett, banker, Cleveland; Anderson Fowler, Carl H. Fowler, George Haldern, E. E. Jackson, ex-Governor of Maryland; Oliver N. Lau, M.D.; John MacGinniss, Vice-President United Copper Company; Kenneth K. McLaren, Secretary Corporation Trust Company, New Jersey; Isaac Oppenheimer, M.D.; Dwight W. Pardee, Assistant Treasurer L. S. and

M. S. R. R. Co.; Leonard W. Sweet, wholesale jeweler; Frank A. Vanderlip, Vice-President National City Bank, New York.

The report of the general manager gave in detail the plan of establishing 100 institutions in the United States during the next two years, and recounted the establishment of the work in England under the guidance of Lady Somerset, and the starting of the work in Canada, Mexico and France.

Announcement was made of the organization of the American Resort Company, formed for the purpose of buying up existing sanitariums and introducing the Oppenheimer treatment. This new company was said to have a strong board of directors, with Dr. J. J. Kindred, President of the Rivercrest Sanitarium, at its head. It is purposed to increase the present stock holdings to from $20,000,000 to $50,000,000. This new corporation is incorporated under the laws of New York State and will be in the nature of a sanitarium trust.

## EXAMINATION OF CANDIDATES FOR THE U. S. PUBLIC HEALTH AND MARINE HOSPITAL SERVICE.

TREASURY DEPARTMENT.

Bureau of Public Health and Marine Hospital Service.

WASHINGTON, D. C., February 16, 1904.

A board of officers will be convened to meet at the Bureau of Public Health and Marine Hospital Service, 3 B street, S. E., Washington, D. C., Monday, April 4, 1904, at 10 o'clock a. m., for the purpose of examining candidates for admission to the grade of assistant surgeon in the Public Health and Marine Hospital Service.

Candidates must be between twenty-two and thirty years of age, graduates of a reputable medical college, and must furnish testimonials from responsible persons as to their professional and moral character.

The following is the usual order of the examinations: 1, Physical; 2, Oral; 3, Written; 4, Clinical.

In addition to the physical examination, candidates are required to certify that they believe themselves free from any ailment which would disqualify them for service in any climate.

The examinations are chiefly in writing, and begin with a short autobiography of the candidate. The remainder of the

written exercise consists in examination on the various branches of medicine, surgery, and hygiene.

The oral examination includes subjects of preliminary education, history, literature and natural sciences.

The clinical examination is conducted at a hospital, and when practicable, candidates are required to perform surgical operations on a cadaver.

Successful candidates will be numbered according to their attainments on examination, and will be commissioned in the same order as vacancies occur.

Upon appointment the young officers are, as a rule, first assigned to duty at one of the large marine hospitals, as at Boston, New York, New Orleans, Chicago, or San Francisco.

After five years' service, assistant surgeons are entitled to examination for promotion to the grade of passed assistant surgeon.

Promotion to the grade of surgeon is made according to seniority, and after due examination as vacancies occur in that grade.

Assistant surgeons receive sixteen hundred dollars; passed assistant surgeons, two thousand dollars, and surgeons, twenty-five hundred dollars a year. When quarters are not provided, commutation at the rate of thirty, forty and fifty dollars a month, according to grade, is allowed.

All grades above that of assistant surgeon receive longevity pay, ten per centum in addition to the regular salary for every five years' service up to forty per centum after twenty years' service.

The tenure of office is permanent. Officers traveling under orders are allowed actual expenses.

For further information, or for invitation to appear before the board of examiners, address Surgeon-General, Public Health and Marine Hospital Service, Washington, D. C.

## FRENCH CONGRESS ON CLIMATOTHERAPY AND URBAN HYGIENE.

This Congress will be held at Nice, from the 4th to the 9th of April, 1904, during the Easter vacations, under the presidency of Professor Chantemesse, with Professor Renaut, of Lyons; Grasset, of Montpelier; Calmette, of Lille, and M. le Dr. Balestre, of Nice, as vice-presidents.

The questions for discussion will be five:

1st.—The climate of the French shore of the Mediterranean. Reporter, Dr. Chais, of Mentone.

2d.—Climatic adaptation. By Dr. Manquat, of Nice.

3d.—Influence of the Mediterranean climate along the French coast on tuberculosis and tubercular patients.

(a) Clinical and critical study of special conditions. By Dr. Baréty, of Nice.

(b) Open treatment. By Dr. Guiter, of Cannes.

(c) Close treatment: Sanatorium for the wealthy, or those in easy circumstances financially, by Dr. Malibran, of Mentone, and establishments for the assistance of the poor with scrofula and pulmonary tuberculosis, by Dr. Vidal, of Hyères; Co-reporter, Dr. Renon, Assistant Professor and Attendant at the Paris hospitals.

4th.—Influence of the climate of the French shore of the Mediterranean on rheumatism and rheumatics. By Dr. Mories, of Nice; Co-reporters, Dr. Huchard, Member of the Academy of Medicine, and Dr. Triboulet, Physician to the Paris hospitals.

5th.—Disinfection of cities. By Drs. Balestre and Camous, of Nice.

The greatest facilities throughout France and all other countries will be afforded to those attending the Congress; in Nice the hotel charges will be very moderate, and will be determined in advance.

Address, for all information, M. le Dr. Herard de Bessé, Secretaire-Général du Congress, à Beaulieu-sur-mer.

---

AN INTERNATIONAL CONGRESS OF SCHOOL HYGIENE will be held at Nuremberg, Germany, on April 4-9, 1904. All persons interested in this subject are eligible to membership, after approval by the local committee. The membership fee is $5. Papers and discussions may be in any European language, but the use by preference of English, French, or German is urged. A copy of every paper and formal communication to be presented to the Congress, together with an abstract in one of the three preferred languages (if the paper is in any other language), must be forwarded in advance to the Committee on Organization. The work of the Congress will be divided into general sessions and special sessions. The special sessions will be held on three mornings and every afternoon. Monday, Tuesday and Friday mornings will be reserved for the general sessions, when addresses without debate will be delivered on points of common interest, official addresses will be delivered, and the business affairs of the Congress transacted.

## BOOK REVIEWS.

DISINFECTION AND THE PRESERVATION OF FOOD, TOGETHER WITH AN ACCOUNT OF THE CHEMICAL SUBSTANCES USED AS ANTISEPTICS AND PRESERVATIVES.—By SAMUEL RIDEAL, D.Sc., London; Fellow of University College, London; Fellow of the Institute of Chemistry, of the Chemical Society, and of the Sanitary Institute of Great Britain; formerly Examiner in Chemistry to the Royal College of Physicians, Lecturer on Chemistry in St. George's Hospital Medical School, and Public Analyst for the Lewisham District Board of Works, etc. Author of "Water and Its Purification," "Sewage and the Bacterial Purification of Sewage." 8vo. 504 pages, illustrated. Cloth, $4.00. Order through your bookseller, or copies will be forwarded, postpaid, by the publishers on the receipt of the retail price. New York: JOHN WILEY & SONS, 43 and 45 East Nineteenth St. 1904.

*Preface to the Third Edition.*—"This edition has been entirely reprinted, and I have altered and revised the book, with such additions as will bring the subject up to the present time. This has involved some excisions and condensations of earlier matter, but all the more important historical portions have been retained. Since the publication of the last edition I have had the opportunity of much experience on special points, and have undertaken researches which have yielded interesting results. The substance of these will be found in the text.

"I trust that the enlargement of the section of food preservation will make it a manual of practical value to those engaged in many of our largest trades and industries. Notwithstanding a general consensus of opinion against the use of preservatives a few years ago, it would seem impossible, under modern conditions of life, to do without some methods of keeping perishable articles of food, without incurring a very large loss, and it cannot be denied that, with proper safeguards, in some instance even chemical treatment may be desirable."

The first edition of this work was published eight years ago. It comprehended, and this edition retains, the gist of a great amount of literature on the subjects of which it treats, knowledge of which is of paramount importance to the votaries of preventive medicine, and of practical importance to all physicians. Of the 504 pages, 407 are devoted to disinfection, beginning with a historical sketch; primitive methods; bacteriology; the method of

dealing with bacteria by exclusion, removal and destruction. The subject is then divided and considered in eight comprehensive chapters: (1) Mechanical disinfection—physical means in detail: light, sunlight; substances comparatively inert—coal, dried earth, ashes, etc.; purification of river water; sand filtration, principles of its action, mechanical and sterilizing filters, etc.; cold and desiccation, resisting power of microbes—survival in soil. (2) Sterilization by heat, conditions required for its use, types of disinfectors, etc. (3) Chemical disinfectants: the non-metallic elements and their derivations; the halogens; oxygen and ozone; nitric acid and oxides of nitrogen; sulphur and its compounds; boric acid, borax and other borates; influence of gases on putrefaction. (4) Metallic salts—salts of the alkalies and alkaline earth; zinc, copper, manganese, aluminium salts, chromium, arsenic, arsenites, lead and its salts, mercury and its salts and compounds, tin, bismuth, silver. (5) Organic substances: Coal tar and its products: general account—tar water; hydrocarbons (neutral tar oils)—benzene, toluene, naphthalene, anthracene, naphthalene urinal cakes, "lauraline"; petroleum, phenols, carbolic acid—variation in the commercial strength, carbolic fumigation, antiseptic power of phenol—not a safe disinfectant, uses and dangers, prescriptions in different countries; carbolic powders—McDougall's, Calvert's, Mayor's, phenolith, other patents; surgical preparations—carbolized oil, gauze, carbolic wool, danger of phenol in surgery, carbolic soaps, tooth powders, various preparations; halogen compounds—tribromophenol, iodophenols; sulphonic derivations—"sulphocarbolates," sozo-iodol; cresol and its higher homologues—table of the phenol series, creosote oil, uses of creosote; wood-tar derivatives; guaiacol—medicinal uses; naphthalene and naphthol—its value in internal antisepsis, betol: "microcidine," alumnol, hydro-naphthol, its use in gauze, oxynaphthoic acid; nitro-compounds—nitro-benzene, nitro-phenols, trinitro-phenol or picric acid, its value as an insecticide, nitrocresols, nitro-glycerine, nitro-cellulose, collodion; amido compounds—ammonia, etc.; salicylic acid—three isomerides, salicylates, oil of wintergreen, salol, salophen, phenosalyl, antiseptic value of salicylic acid, patents, "lactacidine," the use of salicylic acid for preserving food, objections, tablets, gauze, etc.; thymol, camphors and essential oils—the terpenes, their properties, and products of oxidation, turpentines, camphors, the oxidizing power of essential oils, ozone test, sanitas, sanitas oil, value of sanitas as a disinfectant, pinol, peroxols.

(6) Compounds related to the alcohols: Methyl alcohol, etc.; formic aldehyde and "formalin"—properties and disinfectant value, action on bacteria, generators, other aldehydes; ethyl or ordinary alcohol—not a reliable antiseptic; formic acid and sodium formate; acetic acid—aromatic vinegar, action of vinegar on bacteria, pyroligneous acid; glycerine—its uses and limitations; hydrocarbons—acetylene; vegetable acids—tartaric, citric, malic, oxalic, succinic.

(7) Practical methods: towns—limited areas, administration; sewers and drains—ash-pits and dust-holes; houses—walls and wall papers, furniture and woodwork, sinks; sick rooms—isolation, clothing, excreta, removal, light and air, spray, after-disinfection, phenol, sulphurous acid, chlorine, liquid disinfectant by spraying, hot solutions, cisterns, water-closets, earth-closets, middens, cesspools, infection by flies, automatic distributors, wood paving, urinals, "urinal cakes," stables, pigstyes and cowsheds, cattle markets and fairs, slaughter-houses, dairies, bakehouses, pigeon and fowl houses, rabbit hutches, cats and dogs, vehicles, skins, furs, wool and hair, rags; disinfection of air—impurities, sewer-gas, vaporizers and filters for air; water and its purification; preservation of timber—copper sulphate, creosote oils.

(8) Personal and internal disinfection: Disinfection of cavities of the body—(a) by washing out, (b) by spray, (c) gargles, (d) injections of gases or vapors, (e) inhalations; antiseptic dressings—antiseptic paper, rinsing surgical instruments; hypodermic injections; antiseptic soaps; mouth washes, ointments; "sanitary wool" clothing; internal antisepsis—phenol, creosote, essential oils, mineral waters, acids, sulphuric lemonade, the Vienna mixture, betol, etc., quinine, benzosol, phenosalyl; vaccination.

The portion on the preservation of food comprehends a lucid description of the causes of change in food—(1) oxidation, (2) reduction, (3) metallic contamination, (4) organisms, methods of exclusion of organisms and the poisonous products of decomposition; methods of preservation in detail—drying, smoking, salting, gases, injection, acids, bisulphites, glycerine, experiments with boric acid and formaldehyde; cold—refrigerating plant; heat—effects of cooking on bacteria, canning processes; milk—a common vehicle for contagion, precaution, sterilization, pasteurization, condensed milk, butter, pasteurized cream, cheese; bread and grain; brewing and vinegar making; legal statutes and regulations.

Methods of analysis: (A) Bacteriological methods—conditions

to avoid error; determination of the antiseptic value—I. Of antiseptics in solution, Wynter Blyth's method for sewage antiseptics, precautions necessary in these tests; II. Of the vapors of volatile liquids, Chamberland and Klein's method; III. Of gaseous antiseptics; determination of the germicidal value—relative value of the culture and inoculation tests. (B) Chemical methods—necessity of analysis, requirements; chloride of lime—preparation of standard solutions and titration.

Altogether, a work replete with practical knowledge for health authorities and medical practitioners.

A MANUAL OF PRACTICAL HYGIENE FOR STUDENTS, PHYSICIANS AND MEDICAL OFFICERS. By CHARLES HARRINGTON, M.D., Assistant Professor of Hygiene in the Medical School of Harvard University. Second edition. Revised and enlarged. Illustrated with twelve plates in colors and monochrome and one hundred and thirteen engravings. 8vo. Pp. 760. LEA BROTHERS & Co., Philadelphia and New York.

The excellence of this work is attested in a measure by the need of a second edition in less than two years after the first. Nevertheless, the progress of knowledge on some of the subjects treated of, during the interval has been such as to require considerable rewriting, the addition of about seventy pages of new matter, and eight new illustrations. We had occasion to say of the first edition (Vol. xlvi, p. 268): "It is a comprehensive work, well calculated to meet the needs of students, laboratory workers, medical practitioners and health officers. It utilizes the results of all the advantages in the many special departments embraced in preventive medicine, and thereby presents a practical survey of the whole field. Thus it deals with food, air, soil, water, habitations and schools, disposal of sewage and garbage, disinfection, quarantine, military, naval, marine, tropical and personal hygiene." The new matter added is, for the most part, on the relation of insects to human diseases—flies, fleas, bedbugs, mosquitoes and filarial diseases—up to date; altogether eminently suitable as a text-book for students and as a practical manual for physicians and sanitary officers.

THE BLUES (SPLANCHNIC NEURASTHENIA), CAUSES AND CURE.—By ALBERT ABRAMS, A.M., M.D. (Heidelberg), F.R.M.S.; Consulting Physician, Denver National Hospital for Consumptives, the Mount Zion and the French Hospitals, San Francisco;

President of the Emanuel Sisterhood Polyclinic; formerly Professor of Pathology and Director of the Medical Clinic, Cooper Medical College, San Francisco. 12mo. Pp. 243. Illustrated. Price, $1.50. E. B. TREAT & Co., 241-243 West Twenty-third St., New York.

The title of this book expresses the most prominent symptom of the collective variety of diseases of which it treats, the results of nerve exhaustion, commonly designated by physicians as *neurasthenia.* Its recognition, and the factors involved in its causation, imply our ability to cope with the evil and to offer to the sufferers not only amelioration, but a cure. Prefatorily, the author tells us, that from many years' experience with neurasthenics he knows of no variety of neurasthenia which is more amenable to treatment than the *splanchnic* form—that which is due to a loss of tonicity in the muscles of the abdomen—brought about by malhygienic clothing, occupation, disease, lack of exercise, and a host of other conditions. The decadence of the abdominal muscles is a modern heritage; and so are hemorrhoids, constipation, hernia, and a multitude of other evils that may be traced to enfeebled abdominal muscles, amenable to proper treatment. The book is well illustrated by plates and figures well calculated to fix the attention of the reader on the faulty conditions and the natural resources for their correction.

DISEASES OF THE EYE.—By WEBSTER FOX, A.M., M.D., Professor of Ophthalmology in the Medico-Chirurgical College of Philadelphia; Ophthalmic Surgeon in the Medico-Chirurgical Hospital. 8vo. Pp. 604, with five colored plates and 296 illustrations in the text. Price, $4.00. New York and London: D. APPLETON & Co.

The author of this book has been long recognized as an authority on diseases of the eye. The work, indeed, is based upon extended experience, and is a well-digested summary of the known facts in ophthalmology, necessary to the student, and of constant utility to the practitioner who is often called upon for advice in ophthalmic cases.

Among the articles of special importance to physicians and surgeons generally, as well as to specialists, particular attention is invited to those upon albuminuric retinitis, hemorrhagic retinitis, lid operations, declinations of the retinal meridians, cataract, glaucoma and diseases of the orbit.

The subconjunctival injection of salt solutions in iritis and

corneal ulcers, peridectomy in pannus, grattage in trachoma, and the use of opaque slips, combined with correcting lenses, for conical cornea are also given the prominence to which they are entitled in the subject of treatment. The plates and illustrations throughout are of superior excellence.

A MANUAL OF HYGIENE AND SANITATION.—By SENECA EGBERT, A.M., M.D., Professor of Hygiene and Dean of the Medico-Chirurgical College of Philadelphia, etc. Third edition, enlarged and thoroughly revised. 12mo. Pp. 473. Illustrated. LEA BROS. & Co., New York and Philadelphia.

A concise but comprehensive manual, alike suitable for the medical student, sanitary inspector and for the lay reader. It deals with personal hygiene as well as public health. Besides the introductory chapter of seventeen pages, giving a historical sketch of the life-saving results of practical sanitation, it consists of fourteen chapters: Bacteriology; The Atmospheric Air; Ventilation and Heating; Water; Food; Stimulants and Beverages; Personal Hygiene; School Hygiene; Disinfection; Quarantine; Disposal of Sewage; Military Hygiene; Vital Statistics; Examination of Air and Water, every one of which comprehends matter of importance to persons who would understand the relations of such subjects to the maintenance of health, and above all, to those whose duty it is to maintain the healthful conditions of all such relations. The chapter on school hygiene particularly deserves the attention of all school teachers, school authorities and medical inspectors of schools. Moreover, of parents, with regard to the indications of overwork and the regulations of diet and sleep.

THE SELF CURE OF CONSUMPTION WITHOUT MEDICINE, WITH A CHAPTER ON THE PREVENTION OF CONSUMPTION AND OTHER DISEASES. By CHAS. H. S. DAVIS, M.D., Ph.D., Physician to the Curtis Home for Old Ladies and Children, etc. Price, 75 cents. E. B. TREAT & Co., 241-243 West Twenty-third St., New York.

This is a little book of one hundred and seventy pages, well adapted to the lay reader, containing the gist of much that has been written on the causes and conditions promotive of consumption; the importance of pure air, out-door exercise and wholesome food for its prevention. "Appendix I," however, is, for the most part, fallacious: inconsistent with the truths of the body of the book, which, but for this appendix, would be commendable.

PLAIN HINTS FOR BUSY MOTHERS.—By MARIANNA WHEELER, Superintendent of the Babies' Hospital, New York; Graduate of the Training Schools of the New York Hospital and Sloan Maternity Hospital, and Author of "The Baby." Illustrated. New York: E. B. TREAT & Co.

A little book of fifty pages, comprising a concise statement of practical knowledge, which no mother, who has the welfare of her baby at heart, can afford to do without.

A HANDBOOK FOR THE PREVENTION OF TUBERCULOSIS.—Being the first anual report of the Committee on the Prevention of Tuberculosis of the Charity Organization Society of New York. 12mo. Pp. 400. Illustrated. Published by the Charity Organization Society, New York City. Paul Kennedy, secretary, 105 East Twenty-second St., New York.

If it be true that the thorough exposure of an evil amidst an intelligent community is the first and surest means of overcoming it—and we think it is—the prospect, ultimately, of overcoming the most deadly foe to human life in the City of New York is very encouraging. The Committee of the Charity Organization Society on the Prevention of Tuberculosis, who make this report, consists of sixteen representative physicians, and sixteen others who are especially interested in the social aspect of the disease. Among the declared purposes of its work at the outset were:

"Co-operation will be sought not only with charitable agencies of all kinds, but with city departments and State officials. Attention will be devoted to educational propaganda, and the support of the public press will be especially sought. The services of a competent secretary, a district nurse, and a statistician who will devote their entire time to the Committee, have been secured, and at the same time, in so far as it will be of advantage, the entire volunteer body of workers and the expert agents and visitors of the Society will contribute to the objects which it is desired to accomplish.

"The first task will be an exhaustive investigation of some of the social aspects of tuberculosis." The presentation of the results of this task is the chief subject of the volume before us; "Based on a Study of Statistics," by Lilian Brandt, Secretary of the Committee.

The importance of consumption as a cause of death is shown by an abstract of the report of deaths caused by it in the registration area of the United States in 1900, giving the death rates per

1,000 living, sex and age, and its ratio to the total mortality throughout the area. Next follow tabulated statistics of the mortality from tuberculosis in New York City in detail, with diagrams showing age, sex, nationalities, married and single, and locality, with reference to density of population, habitation, insanitary conditions and occupations. A shorter special report follows, pretty much on the same lines, on "Some of the Social Aspects of the Tuberculosis Infirmary, Blackwell's Island," by Homer Folks, Commissioner of Public Charities of the City of New York.

Essays on "The Germs of Consumption," by J. H. Hudleston, M.D.; "Tuberculosis—Its Causes and Prevention," by Hermann M. Biggs, M.D.; "The Duties of the Individual and the Government in the Combat of Tuberculosis," by S. A. Knopf, M.D.; "Tuberculosis and Children," by A. Jacobi, M.D.; "The Climate and Sanatorium Treatment of Consumption," by Henry P. Loomis, M.D.; "Tuberculosis and Its Prevention," by T. Mitchell Prudden, M.D.; "Municipal Sanatorium for Incipient Cases of Tuberculosis"; A Report from the Hon. Homer Folks, Commissioner of the Department of Public Charities; "The Plague In Its Stronghold—Tuberculosis in the New York Tenement," by Ernest Pool; "Institutions Where Tuberculous Patients May Receive Treatment in New York and Vicinity," by Charles H. Johnson, and several shorter summaries and circulars of practical utility. Altogether, a hand-book replete with practical knowledge worthy of the widest possible distribution.

New York State Hospital for Crippled and Deformed Children.—Report for the year ending September 30, 1903.

The hospital building is located at Tarrytown, N. Y., about one mile south of the New York Central and Hudson River Railroad station, at Paulding avenue, on the banks of the Hudson River.

Newton M. Shaffer, M.D., Surgeon-in-Chief and Superintendent, reports that, while this is, strictly speaking, a report of only one year's work, it seems an appropriate occasion to review what has been accomplished during the thirty-four months that the hospital has been in existence.

With accommodations for only 25 patients, 52 have been treated during this period. Of this total, 33, or 63.46 per cent., were cases of tuberculous disease of the joints. Of the whole number treated 27 have been discharged. Of these, 55.55 per cent. were cured and 44.45 per cent. discharged as more or less im-

proved, many of them practically cured; 51.92 per cent. of the whole number treated have been discharged. There have been no relapses or deaths. Those discharged, as cured, are examined, if accessible, from time to time, and those who have been "relieved" and are still under professional observation, are carefully watched when it it is possible to reach them. Their home surroundings are known and their parents, so far as possible, willingly carry out the instructions of the surgeons. If a relapse occurs and the symptoms demand it, these patients are eligible to readmission.

The average time of treatment of the 27 patients discharged since the hospital opened its doors on December 7, 1900, has been one year, 3.6 months, and of the patients who are now in the hospital, the average residence is one year four months. Of the 25 patients now resident in the hospital, 7 were received during the 10 months ending September 30, 1901, and 9 during the year ending September 30, 1902, and 9 during the year ending September 30, 1903. There should be some way arranged by which patients, living out of New York City and remote from the hospital, could be sent to the hospital for a short period every six months to have their apparatus put in order.

It is impossible to state with absolute accuracy the number of applications for admission that have been received during the past year. Two hundred and twelve formal applications, of which a record has been kept, have been received, and verbal applications made to the members of the medical staff have been, it is estimated, upward of one hundred and fifty. A formal record of these verbal applications has not been kept. It is noticed that applications from the interior of the State have shown a considerable increase.

"With at least three hundred and fifty applications for admission, we have been able to receive only twelve patients into the hospital. The number of poor cripples, for whom much can be done, in both city and State, and for whom no adequate hospital accommodations exist, is as yet unknown, but it is safe to say that there are several thousand of them. The pressing need of the new hospital, various sites for which are now under consideration, which will soon be erected, and which, when completed, will accommodate a much larger number of patients, becomes very apparent when the demands made upon us are even briefly considered; and it is with much pleasure that we note that in Ohio, as well as in Minnesota, the care and treatment of crippled and deformed children by the State is receiving proper attention.

"Hampered as we have been by a small and inadequately equipped hospital building; overwhelmed with hundreds of applications, which we have been obliged to decline; lacking the room for a full corps of assistants, and with overcrowded wards, we have, nevertheless, kept in mind the ultimate benefit of those committed to our care; and the excellent results obtained speak well for the resident officials who have given much time and energy to the care of the patients—oftentimes at considerable personal inconvenience."

The work of the hospital for the past year has been carefully summarized in tabular form. Each patient treated is mentioned by number, and the condition briefly stated, both at the time of reception and at the end of the year.

*Rules and Regulations.*

The hospital was established "for the care and treatment of any indigent children who may have resided in the State of New York for a period not less than one year, who are crippled or deformed, or are suffering from a disease from which they are likely to become crippled or deformed."

The following conditions are imposed upon all applicants: "No patient shall be received except upon satisfactory proof made to the Surgeon-in-Chief, by the next of kin, guardian, or a State, town or county officer, under the rules to be established by the Board of Managers, showing that the patient is unable to pay for private treatment. Such proof shall be by affidavit. (Affidavit blanks will be forwarded upon application to the Surgeon-in-Chief, New York State Hospital for the Care of Crippled and Deformed Children, Tarrytown, N. Y.) If there was an attending physician before the patient entered the hospital, it shall be accompanied by the certificate of such physician giving the previous history and condition of the patient.

Patients from four to sixteen years of age will be received for treatment, and all applications will be acted upon in the order of their reception. No patient will be admitted without an examination by and a certificate from the Surgeon-in-Chief, or in his absence, one of his assistants.

Application for admission should be made to Dr. Newton M. Shaffer, Surgeon-in-Chief, No. 28 East Thirty-eighth St., New York, who will appoint a time and place for the examination of the patient. Patients living at remote points in the State are referred to the following gentlemen (out-of-town members of the consulting staff): Dr. A. Vander Veer and Dr. S. B. Ward, of

Albany, N. Y.; Dr. Louis A. Weigel, Rochester, N. Y.; Dr. Roswell Park and Dr. Charles G. Stockton, Buffalo, N. Y.; Dr. Richard B. Coutant, Tarrytown, N. Y.; Dr. J. Van Duyn and Dr. Henry L. Elsner, Syracuse, N. Y.; Dr. Henry A. Gates, Delhi, N. Y.; Dr. Grant C. Medill, Ogdensburg, N. Y.; Dr. Frank W. Sears, Binghamton, N. Y.

## CONTEMPORARY LITERATURE.

The February "Atlantic" offers a group of leading articles which can be neglected by no person earnestly concerned about the urgent issues in America to-day. These papers, in which subjects of the first importance are treated by the men best qualified to discuss them with authority and vigor, are:

"Wall Street and the Country," by Charles A. Conant, a treatise on the uses and abuses of the money power, with which the number opens, followed by a sensible and dispassionate paper on "Lynching: a Southern View," by Clarence H. Poe, and a thoughtful discussion of the question, "Is Commercialism in Disgrace?" by John Graham Brooks.

Henry Villard's "Recollections of Lincoln," from his forthcoming autobiography, throw much fresh and vivid light upon the character of Lincoln as a statesman and as a man.

Among the literary and biographical papers are Colonel Higginson's delightful paper on "English and American Cousins"; Andrew D. White's second and concluding paper upon "Paolo Sarpi," the Italian reformer; a searching and suggestive critical essay upon "Borrow," the author of Lavengro, by H. W. Boynton; Professor Irving Manatt's breezy study of the recently discovered Persians by the Greek dramatist, Timotheos, with an animated English version of the play; "A Basket of Chips," a finely wrought and attractive study of bird songs in winter, by Henry Oldys; a clever roundabout paper on "Cynicism," by Arthur Stanwood Pier, and a characteristic humorous sketch by Martha Baker Dunn, entitled "Cicero in Maine.

The continuation of Robert Herrick's strong serial; short stories by Charles Miner Thompson and Beatrice Hanscom; Robert Grant's delightful poetical tribute to Colonel Higginson upon his eightieth aniversary, and poems by Arthur Ketchum, M. A. DeWolfe Howe, Clinton Scollard, and Rev. J. W. Chadwick, D.D.;

sincere and authoritative book reviews by various hands, and a genial Contributors' Club unite to make an admirable number.

THE CONSERVATION OF ENERGY IN THOSE OF ADVANCED YEARS. —Dr. J. Madison Taylor, of Philadelphia, contributes to the February number of "The Popular Science Monthly" the beginning of an article on this subject, of particularly inviting interest.

"Mere existence beyond the ordinary bounds set by nature is of little value unless accompanied by many characteristics and qualities, which make life worth living.

"The principles of action upon which the effects of advancing years may be postponed are simple, clear and practicable. The difficulties are chiefly the indifference or indolence which age begets. Whenever a person has acquired an active desire to retain the freshness of youth and is moderately diligent in pursuing whatever means should be adopted, the results are successful often beyond expectation. The conditions of success are an original soundness of constitution and fairly healthy organs. . . .

"The potentiality of cellular cleanliness and lymph activity on the mechanism of life is paramount, and is not yet duly appreciated by men in or out of the profession of medicine.

"An enormous field of possibilities is opened by studiously striving to retain the fullest elasticity of all the tissues; and to this I desire to call particular attention with some detail and emphasis in the latter section of this article."

A NEW PHYSICAL CULTURE FOR CHILDREN.

It has long been the aim of educators to find a satisfactory substitute for the stiff and dull gymnastic drill taught in schools. While the regular set exercises have a certain value—since exercise of any kind is beneficial—it is now realized that, on account of their dull, monotonous character they are as fatiguing, mentally, as an equal time spent on mathematics. As the result, a new system of physical culture has been evolved, which makes use of the imagination and dramatic powers to give pleasure to the exercises. The new plan consists in imitating the characteristic actions of animals and other objects of Nature, as well as various phases of the industries, such as the activities of the farmer, etc. By this means children receive healthful bodily exercise, with a pleasant stimulation of the mind. In the March "Delineator," M. Wilma Sullivan describes the new system of physical culture in detail, with pictures that illustrate aptly the different exercises. Exquisite spring styles and illustrated articles on topics of fash-

ion are supplemented by literary features of uncommon interest and value. Lillie Hamilton French has an inspiring paper in the "Joy of Living" series, and in the "Fountain of Youth" Dr. Murray describes the care and treatment of the eyes. The needle and fancy work topics cover a wide range, and most of the other interests of the home are given consideration in the regular departments.

---

PROCTOR'S THEATERS.

One of the secrets of Mr. F. F. Proctor's success at his various New York theaters is the ample provision made for the comfort of his patrons, not alone while they are in their seats, but in all parts of his theaters. Commodious retiring-rooms are provided on every floor of his houses, public telephones, writing-desks generously supplied with attractive stationery, and messenger service are also at the disposal of his patrons, and there are hundreds of out-of-town persons who regularly make one of the Proctor theaters their rendezvous at the end of a day's shopping, where they are able to give proper attention to their external appearance, and at the same time put themselves in a fitting frame of mind by the enjoyment of the attractive specialties, which are always to be found upon the programmes. The Twenty-third Street and Fifth Avenue, in particular, are regarded by both urban and suburban patrons as virtual club houses, since, with the exception of the restaurant features, every item of women's clubs is to be found there. An official of the fire department recently expressed himself as being most highly pleased with the excellent condition in which he found the Proctor houses. "There are no theaters in the city," he said, "where a proportionately greater vacant floor space is found than in the Proctor houses." The safety of a theater depends not so much on the number of its exits, but on their availability and arrangement. In the Proctor theaters it would be almost impossible to have a panic of serious proportions, since the space around the exits is cleared, and there are no narrow passages in which an excited crowd might become massed. The possibility of a blaze is reduced to a minimum by the adoption of every safety device, and this extra floor space further safeguards the audience by rendering impossible even a causeless panic. Mr. Proctor's entire success, in fact, is founded upon his careful study of the public needs, and an intelligent catering to that demand. Nothing is left undone that might conduce to the safety and enjoyment of his patrons.

# THE SANITARIAN.

## APRIL, 1904.

NUMBER 413.

## INFECTIOUS AND CONTAGIOUS DISEASES.

By A. N. BELL, A.M., M.D.

Infectious and contagious diseases are those diseases which are liable to spread in the community, or over a large area of the earth's surface, when they are designated as epidemic diseases; or to remain among the inhabitants of particular localities, under the influence of local conditions, when they are distinguished as endemic diseases. The words infectious and contagious, as here used with reference to preventive measures for diseases so characterized, are synonymous. All infective diseases are microbic, that is to say, germ diseases, though the specific germs of a number of them are as yet undiscovered. It is noteworthy that the germs of infectious disease generally exist and are cultivated outside the living body, and are commonly fostered by filthy conditions. Quite recently, however, it has been discovered that there are non-pathogenic microbes of wide distribution which, in all respects, except virulence, closely resemble the specific germs of typhoid fever and diphtheria; and non-pathogenic bacilli, similar to anthrax bacilli, have been found to be protective against anthrax. Some authorities regard these harmless (?) bacilli as being identical with the virulent microbes that they resemble, and therefore capable of assuming a virulent character if cultivated under suitable conditions—a view that reintroduces the untenable hypothesis of spontaneous generation in a new form.

Many of the specific diseases, and especially those related to telluric conditions, attach themselves more or less permanently to certain localities, and become abidingly endemic. Thus, cholera in the delta of the Ganges, leprosy in parts of Norway, smallpox in the Soudan and elsewhere, where vaccination is not practiced. And in a less degree, diphtheria and typhoid fever are endemic in several American cities.

From time to time most of the specific diseases break out, so to speak, and become epidemic, as smallpox has been in some sections of the United States, where vaccination has been neglected during the last three years. Occasionally a disease diffuses itself so generally over a great part of the globe as to become pandemic, as influenza did a few years ago. The causes of such prevalence are very imperfectly known, hence they have been vaguely attributed to an "epidemic constitution" of the air, or to pandemic waves of unknown nature; but more intelligently, to meteorological conditions.

The liability to infectious diseases varies in man according to age and sex, as well as to locality, climate, season and surroundings. Children are more liable to measles, scarlet fever, mumps, diphtheria and whooping-cough than adults. Smallpox, diphtheria and croupous pneumonia are most prevalent during the winter season; typhoid fever is most prevalent during the autumnal months, and yellow fever in summer. Similar variation occurs to some extent among the different races of men, and to a still greater degree among the different genera and species of the animal kingdom and insects. Thus rodents and ruminants are susceptible to anthrax, but cats, dogs and swine are almost wholly exempt from it. Rodents are particularly liable to plague, insomuch that in China and the Himalayas it is called rats' disease; but mice, cats, monkeys, pigs, and probably sheep, goats, dogs and other animals are subject to it; and it may also be communicated by flies. Cholera affects birds, and, like typhoid fever and dysentery, is liable to be spread by flies. Cows are subject to scarlet fever, communicable to children by the milk, contaminated with exfoliations from the bag and udders, or otherwise. Smallpox is essentially a cow disease, first described as being transmissible to man by Jenner, in 1796, and who, six years thereafter, proved that cowpox in man is protective against smallpox, and smallpox protective against cowpox. This knowledge was the foundation of the protective power of vaccination: the most universally accepted truth known to preventive medicine, and its practice as a life-saving measure unequaled by any other.

The germs of all infectious diseases, besides the scales or exfoliations of a number of them, containing the germs, are subject to being air-borne. Tinea, favus, scarlet fever, measles, smallpox and typhus fever exfoliate infinitesimal scales; typhoid fever and diphtheria, and most of all, tuberculosis, in the sputum, emit secretions which dry into dust, and, like the exfoliations of the

exanthematous diseases, is liable to lurk in the bedding, clothing and carpets, and float in the air of rooms where these diseases have occurred, indefinitely, rendering them continuously liable to communicate their respective contagions to newcomers, so long as they remain undisinfected and unexposed to the air and sunlight.

Virulent and granular ophthalmia, though most usually spread by direct contact with the pus or epithelium cells, by means of towels, and erysipelas and hospital gangrene in a similar manner, by the dressing materials, are also disseminated through the air by the dried disintegrations of pus and putrifying particles; and the more, if the air of the wards for those diseases is not kept as thoroughly dry as possible. It has been abundantly demonstrated by experience that these diseases most frequently occur in damp and dark abodes or hospital wards—in those wards where the floors are too frequently wet—instead of which they should be rubbed, indeed, forcibly *scrubbed* with dry rubbers. So, too, the furniture and walls.

In this respect it is well to remember the practical lesson of the significance of ammonia—ammonia being a common result of the putrefaction of organic matter in the atmosphere as well as otherwise—given by Dr. Angus Smith a few years ago:*

"When a room is shut up, even for a day, unless that room be very large indeed, there is always that peculiarity observed by sensitive persons to which would be given the name of closeness. Yet there are people who do not seem to observe this, and who spend their lives in rooms in which this closeness may be constantly observed. I have often reflected on this peculiar condition. Surely if oxygen removed all impurities these impurities ought to have been removed, since the oxygen of the air is never absent from the rooms, except to such a small extent that the estimation of the change is extremely difficult. If we lift up a window and allow the air to blow into the room so as to replace the original air, we do not at all times attain efficient aeration. It takes but a few minutes, in a climate where there is considerable motion in the air, to renew the atmosphere of a room entirely. We may judge of this by making a trial upon a visible atmosphere, viz., one pretty well filled with smoke. We see how rapidly with an open window every trace may be removed from the farthest corner, and yet this new air is not sufficient to refresh the room, and closeness is the characteristic still complained

* Address on "Air as a Sanitary Agent," at the Sanitary Institute of Great Britain.

of. It is the custom in well-regulated houses, not to renew merely the air, but to cause the air to blow through the house for a considerable time every day when the weather permits it. Knowing this, for a long time I wondered very much what was the reason. Sure, I said, there was vital air enough without the long-continued current. Looking further at this subject it occurred to me that really clean houses were preserved in this condition by something more than currents of air generally, and that good housewives resorted to the practical methods of rubbing by hand, and it seemed clear that no furniture could be preserved from the peculiar condition of mustiness in any house where the doors and windows must be frequently closed, unless the absolute removal of certain substances from the surface were resorted to. And what was this substance that required to be removed? I supposed it to be one of organic origin. If organic matter is everywhere, the presence of ammonia is everywhere possible; and if that matter is decomposing ammonia is everywhere present, that is the general statement which this paper illustrates. It is now many years since it was observed by me that ammonia could be found on surfaces exposed to exhalations from human beings; but it is not uutil now that the full significance of the fact has shone on me, and the practical results that may be drawn from it in hygiene and meteorology. These results are that ammonia may be an index of decayed matter. This does not apply to the substances which may be called germs, whether it be possible to see them or not, because they are not bodies which have passed into the ammoniacal stage, although some of them may be passing—those, for example, which are purely chemical and exert what we may call *idiolytic* action.

"As a part of the atmosphere ammonia touches all substances, and can be found on many; it is in reality universally on the surface of the earth in the presence of men and animals, perhaps attached more or less to all objects, but especially to all found within human habitations, and, we might also add, with equal certainty, the habitations of all animals.

"This ammonia on the surface is partly the result of decomposition continually taking place, of organic matter adhering to everything in dwellings. The presence of organic matter is easily accounted for; but it is less easy to detect than ammonia. It is probable that the chief cause of the presence of ammonia on surfaces in houses and near habitations is the direct decomposition of organic matter on the spot. If so, being more readily observed

than organic matter itself, it may be taken as a test, and the amount will be a measure of the impurity."

But besides the maintenance of such conditions of the domicile, as those here referred to, favorable to the propagation of infectious diseases, they are well known to be variously communicable by foul water, food, soil and dirty clothing, through the skin or mucous membrane, without any breach of the continuity of the surface, and by respiration; and by inoculation the conveyance of the germ, or the morbid material containing it, either directly by actual contact with the body of the diseased person, or indirectly by means of some instrument or other article from the affected to the unaffected person, an essential feature of the process being some breach of surface in the skin or mucous membrane.

While some diseases are only capable of being transmitted by inoculation, others are both infectious and inoculable. That all infectious diseases depend upon and are communicable by living germs, capable of growing and multiplying within the bodies of men and animals, is verified by the life history of such germs as have been discovered and carefully studied. All possess marked periods of development, maturity and greatest vigor, and a period of decline ending in death. The period of development marks the period of incubation.

Incubation is an exceedingly important feature in all infectious diseases, so far as known. It is that period which elapses between actual infection and the appearance of the first symptoms of the disease. This period varies considerably as regards different diseases, ranging from a few hours, in the cases of some of them, to several weeks in the case of others. The following table is an approximate statement with regard to the diseases named:

| | *Period of Incubation.* | *Duration of Infectivity.* |
|---|---|---|
| *Disease.* | *Days.* | *Weeks.* |
| Bubonic plague..... | 2 to 7 | 4 |
| Chickenpox ..... | 10 to 14 | 3 |
| Cholera ..... | 1 to 5 | 3 |
| Diphtheria ..... | 1 to 8 | 2 to 8 |
| Diarrhea ..... | 1 to 4 | 1 to 2 |
| Enteric fever..... | 8 to 14 | 6 |
| Erysipelas ..... | 1 to 5 | 1 |
| Influenza ..... | 1 to 4 | 3 |
| Measles ..... | 8 to 20 | 4 |
| German measles..... | 6 to 14 | 3 |

| | | |
|---|---|---|
| Pneumonia (Croupous).. | 5 to 7 | During course of disease. |
| Mumps ..... | 14 to 22 | 3 |
| Scarlet fever..... | 1 to 6 | 6 to 8 |
| Smallpox ..... | 12 | 6 |
| Tuberculosis ..... | Unknown. | During course of disease. |
| Typhus fever..... | 6 to 14 | 4 |
| Whooping-cough ..... | 4 to 14 | 8 |
| Yellow fever..... | 2 to 5 | 3 |

## THE CONTROLLING INFLUENCE OF ENVIRONMENT IN EPIDEMIC INFECTIOUS DISEASES.*

By J. W. McLaughlin, M.D.,
Professor of Medicine, Medical Department University of Texas, Galveston, Tex.

The knowledge which has been acquired in the past thirty years, directly and indirectly, from the pursuit of bacteriological studies, has probably done more for the advancement of medicine than has been accomplished within the past hundred years by knowledge derived from all other sources. A comparison of the present scientific status of bacteriology with that which it occupied only a few decades ago, will show not only the marvelous growth of the science, that this resulted from discovery of facts in this branch of learning following other discoveries of similar truths in rapid succession, but that the human mind does not receive and fully comprehend the scope and relations of important and far-reaching facts when they are presented in such rapid succession. It would, indeed, be strange if many of the discoveries in bacteriology have not been displaced in the mind of observers by more recent discoveries, before the former had been thoroughly digested. Indeed, the failure, as I believe, to fully appreciate the effect of attenuation of micro-organisms—(discovered by Pasteur in 1850)—upon the development and type of infectious diseases has furnished the theme of this paper.

Long before infectious epidemic diseases were known to be caused by an invasion of pathogenic micro-organisms, the influences of climate, season, sunlight, cleanliness, etc., in modify-

*Read at the meeting of the Austin District Medical Society, December 22, 1903.

ing the type of the disease, or epidemics, even in preventing them, were clearly recognized, and the term "epidemic condition of the atmosphere" was often used to describe a condition favorable to the spread of an epidemic. Exactly how environmental influences modified the type of epidemic diseases, for example, smallpox and yellow fever, was not then understood, and even now the mildness in the type of smallpox, which has recently prevailed somewhat extensively in many of the States, has been ascribed by writers to changes wrought within the main body, rather than to environmental conditions without the body.

That the remarkable mildness in type, in the recent epidemic of smallpox, is not solely due to immunizing conditions, which have been produced in people of this age by a thorough enforcement of general vaccination measures, is borne out by the following facts: First.—Vaccination gives protection only to persons who have been vaccinated; the protection is in no degree transmitted to their children, and could not, therefore, modify the virulence of smallpox in those people. Second.—Mild and severe epidemics of smallpox have appeared at times before vaccination was known. "The virulence of the smallpox agent—(Immermann, 'Nothnagel's Encyclopædia of Practical Medicine')—is in all probability very variable, as is assumed for other disease poisons (scarlet fever virus, etc.). Besides the different degrees of individual susceptibility, this second factor has a marked influence on the severity of prevailing smallpox cases. This difference of virulence was most clearly expressed in the pre-vaccination period, in which mild and grave smallpox epidemics were distinguishable, just as we now distinguish mild and severe epidemics of scarlet fever, measles, etc., the varying character of which can be explained only by the assumption of a temporary difference in virulence of the exciting principle." O. J. Potter calls attention (Osler's "Practice of Medicine") to the fact that John Mason Good, in his "Study of Medicine," describes a number of very mild outbreaks of smallpox, some of which were mistaken for chickenpox. Sydenham, in the seventeenth century, stated that "smallpox has its peculiar kinds, which takes one form during one series of years, and another during another."

It is a matter of history that upward of a hundred years ago yellow fever, often of malignant type, appeared in epidemic form, and in a succession of years, in New York, Philadelphia, Boston, and along the Atlantic seaboard, in every town of commercial importance from Maine to Florida.

La Roche says that (Sternberg, "Twentieth Century Practice, Medical Supplement") "Dr. Rush and others laid great stress upon a quantity of damaged coffee which was exposed, during the latter part of July, in a place (on the wharf and adjoining dock) in Philadelphia, and under circumstances which favored decomposition. Its smell was highly putrid and offensive, insomuch that the inhabitants of the houses in Water and Front streets, who were near it, were obliged in the hottest weather to exclude it by shutting the doors and windows. Every person who only walked along these streets complained of the intolerable fetor, which upon inquiry, was constantly traced to the putrid coffee."

Yellow fever has disappeared from the latitudes of Philadelphia and Boston, and there has been no epidemic of the disease there since 1802, and, although it has been carried there time and again since that date, the disease will no longer develop. Are the conditions once favorable to the development of yellow fever, but now unfavorable, due to environmental changes, or to a disappearance of the intermediate host (the *Stegomyia fasciata*)? A case in point, the disappearance of malaria from England, will, perhaps, afford an answer to this inquiry. Nutall, L. Corbett and Strangeways Pig (Marchiafava and Bignami, "Twentieth Century Practice, Medical Supplement") who have gone into this subject, have reached the following conclusions: First.—The disappearance of malaria from England is not due to the disappearance of the malaria-bearing mosquitoes. Second.—*A. maculipennis, A. bifurcatus, A. nigripes* are found in districts that were once malarial as well as in non-malarial districts. Third.—The disappearance of malaria is due to improved drainage, the reduction of the population in malarial districts, and the general use of quinine.

In Italy, Celli and Gasperina pursued researches in the Tuscan Maremma, in which there are *anopheles* but no malaria. People fell ill there from fever acquired in neighboring localities, as Sardinia, who might infect the mosquitoes, but the fact remains that autocthonous malaria does not occur.

The failure of yellow fever to spread into epidemic proportions in San Antonio during the falls months this year, when the opportunities were so very favorable, for example—yellow fever cases and the *Stegomyia fasciata* in great numbers, can, it seems to me, be due only to unfavorable environmental conditions existing at that place.

Now, with this presentation of the subject, I will submit an ex-

planation of the class of phenomena mentioned, based upon a reasonable interpretation of existing knowledge of pathogenic micro-organisms and the relation they bear to infectious diseases. A brief statement of bacteriological facts is necessary to this explanation.

Infectious diseases are caused by micro-organisms which are specific in etiology, in that each kind of disease is caused by a specific micro-organism, and are specific in reproduction, in that they breed true. A micro-organism that is infectious to one species of animal may be innocuous to another species, or to a variety of the same species of animal. Micro-organisms, when suitably environed, are capable of producing in an artificial culture medium, or in the tissues of the human body, specific metabolic products. Those produced in the human body may be, and doubtless are, the essential causes of the specific lesions and clinical symptoms of the resulting infectious disease.

The following list, according to Gotslich, comprises the principal known products obtained by growing bacteria in artificial culture media: $CO_2$, $H_2$, $CH_4$, $H_2S$, $NH_3$; nitrates, water, sulphur; volatile substances, trimethylamine, alcohol, formic acid, acetic acid, propionic acid, butyric acid; oxyacids and polybasic acids, lactic, malic, succinic, oxalic and tartaric acids; amides, such as leucine, alanine, etc.; aromatic bodies, tyrosin, phenol, cresol, hydroparacumaric acid, indol; pigments, carbohydrates; peptones; alkaloidal and albuminoid poisonous substances—ptomaines and toxins; and hydrolytic ferments."

It is generally conceded that the pathogenic micro-organisms, which have invaded the animal body, are not the cause of its infection, but this condition is a result of the action of the poisonous substances—toxins and toxalbumins produced, and as they are the essential causes of the clinical symptoms and pathological changes, the virulence of the type of the disease will, therefore, be in direct proportion to the quantity of such poisons elaborated in the tissues of the body.

Now, it has been repeatedly demonstrated that the capacity of a living species of micro-organisms to produce metabolic products in the culture medium in which it grows and multiplies, is not an invariable quantity. On the contrary, this capacity of the micro-organism may be decreased in any degree, even to total extinction, and the condition of attenuation, as it is termed, may be made permanent, temporary, or it may be reversed and the capacity restored without causing apparent injury to the micro-

organism. These important truths are fully discussed by Frankel, and I shall take the liberty of quoting at some length his remarks upon this subject:

"In the year 1880 Pasteur surprised the scientific world by the discovery that under certain circumstances the micro-organisms of chicken cholera lose their virulence, to a greater or less extent, without showing any change in their appearance, way of growth, etc.

"Toussaint and Pasteur found that anthrax bacilli could be deprived of their virulence in like manner; and the same fact has been proved with regard to swine erysipelas, symptomatic anthrax, the pneumonia bacteria of A. Frankel, and some others.

"This diminution of virulence is the result of two essential different causes. The one which we call the natural cause has recently been fully elucidated, particularly by Flugge. It is a gradual diminution of infectious power in bacteria which we compel to vegetate for a long time separated from their natural conditions of growth, on our artificial food media, and under the atmospheric conditions of our laboratories. By a gradual adaptation to the altered, saprophytic way of life, or by a progressive selection of such cells as are naturally more capable of adopting this altered way of life, the original capacity for development within a foreign body diminished more and more. As an outward sign of the change which has taken place, we observe that the culture now shows a much more luxuriant and rapid growth on the lifeless food medium than was at first the case, when the conditions were yet new and strange. Not all the pathogenic bacteria possess this power of 'cutting their coat according to their cloth' and adapting themselves to outward circumstances. Some cling with marked tenacity to their proper character, which they do not leave even when compelled to exist for years outside the body. Others, as the bacilli of glanders, the streptococci of erysipelas, Frankel's pneumonia bacteria, the diphtheria bacilli, etc., lose their virulence very rapidly.

"A similar phenomenon was observed in the case of the saprophytic bacteria. Hueppe and his pupils have shown, for instance, that the sour-milk bacillus, when bred continually and uninterruptedly on our artificial foods, lose the capacity for effecting the changes from which they take their names, and Hueppe even speaks of this as a loss of virulence in the micro-organisms.

"It lies in the nature of things that this diminution of virulence takes place gradually, proceeding step by step, and not with one

great leap. Therefore, we are often able to interrupt the process at a certain stage, or even to retrograde and undo the work already done. The best, and indeed the only, means to this end is to give back to the partially weakened cells their natural conditions, and endeavor to re-accustom them once more to their former way of life.

"In the case of pathogenic species, we attempt to inoculate them into the animals most susceptible to them. If this fails, we can have recourse to methods of increasing the natural susceptibility of an animal artificially. Should this prove successful, and the micro-organism once more establish itself on its natural soil, one may reckon with some degree of certainty, on its recovering its former power.

"In direct contrast to the phenomena hitherto discussed, is a second mode of diminishing the virulence of micro-organisms, which leads to the same final results. That which brings about the diminution is, here, not the long-continued influence of altered (but not necessarily worse) conditions of life; it is the action for a short time, of influence directly prejudicial to the bacterial protoplasm.

"In fact, all the means employed to produce artificial diminution of virulence in pathogenic bacteria are such as, if applied in a slightly stronger form, would cause the destruction of the cells, and would kill their contents.

"Thus we breed bacteria in media to which a certain quantity of antiseptic or disinfecting substance has been added, but which just allows the microbes to exist and grow upon them. Such, for instance, as the process of Roux and Chamberland for diminishing the virulence of anthrax bacillus, by cultivating it in a bouillon with the addition of bichromate of potassium (1 to 5000 to 1 to 2000); and that of Toussaint, by mixing about 1 per cent. of carbolic acid with blood containing anthrax bacilli.

"In a similar manner—*i. e.*, as a disadvantageous form of nutrition—the organism of certain animals is found to act, namely: those animals which are insusceptible, or but little susceptible, to the particular kind of bacteria which we desire to weaken. Thus the bacilli of swine erysipelas lose their virulence to a certain extent when passed several times through the bodies of rabbits, as has been proved by Pasteur and Kitt.

"Chauveau robbed the anthrax bacilli of their poisonous property, by breeding them under a pressure of eight atmospheres, and

Airlong found that 'sunlight is capable of weakening these same bacilli, and even their spores.'

"By far the surest and most commonly used procedure is the exposure of the micro-organisms to the influence of high temperatures.

"Toussaint kept blood containing anthrax bacilli for ten minutes at 55° C. The bacilli were by no means killed by the heat, yet they were rendered harmless by it. Pasteur, for his experiment on a large scale, employed a considerably lower degree of heat, but he had not given full particulars of his method, so that no definite judgment can be formed regarding it. We, therefore, owe our thanks to Koch and his coadjutors, who once more approached this question in a methodical, strictly scientific course of experiments, with a view to ascertain the effects of heat in diminishing bacterial virulence by studying the anthrax bacillus—the best known and most suitable species for this purpose.

"Koch, Gaffky and Lœffler found that at 45° C. a diminution of virulence was perceptible in the cultures.

"They further discovered the important fact that the lower the temperature is by which a diminution takes place, the longer it takes for such diminution, but at the same time the more permanent are the effects.

"Even variations of a fraction of a degree are here important. While anthrax bacilli can be rendered perfectly harmless in nine days with 43° C., it requires twenty-four days if we only employ 42.6° C.; but in this latter case the new quality of the bacteria has become so thoroughly a second nature to them that they cannot throw it aside again. They not only keep it throughout their own life, but they even transmit it to their progeny. In fact, we can breed from them as many generations as we will of fully harmless bacteria.

"If we endeavor to diminish virulence under the influence of higher temperature more quickly—in a few days—the bacteria regain it with proportional rapidity.

"But their virulence cannot be destroyed at one blow. Before the micro-organisms part with it completely they pass through a number of intermediate stages, each of which, with the amount of virulence still remaining, is sufficient to affect certain animals, the efficacy of the poison remaining longest for those most susceptible to it. Bacilli of twenty days will kill guinea pigs; those of ten days, rabbits; those of six days, sheep, etc.; and this de-

gree of partially diminished virulence can also be preserved throughout generations of cultures.

"And even if the above statements may not, perhaps, always be borne out in practice with perfect exactitude in all cases, that does not change the incontestably proven scientific fact that bacteria of a high degree of virulence may lose this quality for a longer or shorter time, or even permanently, and to any extent, up to its complete extinction.

"Something similar has been observed in the saprophytic species also. Many pigment bacteria, under the influence of high temperature or of culture media little suited to them, lose the faculty of forming coloring matter, and sometimes do not regain it under normal circumstances until after a considerable lapse of time.

"Why can the former grow and multiply in the bodies of susceptible animals and the latter cannot?

"The circumstance that all the influences which rob the bacteria of this, their (to us) most important capacity, are such as are injurious and hostile to them would lead to the supposition that an extensive degeneration of the cell protoplasm took place, which would show itself in other places also. Yet this is found to be the case to a very limited extent only. The harmless anthrax bacillus has the same appearance and the same forms as the normal anthrax; its separate members show the same formation; the contents are as clear as crystal and homogeneous; the rods are motionless; they divide and produce spores, as before. On the gelatine plate and in the needle-point culture, we observe the same sort of growth; in short, there are no really striking differences."

The conclusions which follow this statement of facts will be summarized as fellows:

First. The pathogenicity of micro-organisms is not a constant, invariable quantity.

Second. The pathogenic activity of a micro-organism varies directly with its capacity to manufacture disease-producing substances—toxins and toxalbumins.

Third. The capacity of micro-organism to manufacture toxins or toxalbumins is affected by certain natural and artificial agencies; the change effected in the micro-organism is called "attenuation."

Fourth. The agencies or means used to attenuate germs, that is, to decrease their pathogenic activity, are unfavorable culture

media, or are conditions of life in which the germs are compelled to grow.

Fifth. Sunlight is a powerful, natural attenuating agent.

Sixth. In the light of these facts I feel justified in the belief that there are other natural means of attenuating the micro-organisms of disease, and, in this way, of modifying the type of epidemics, or of preventing their development.

The environmental conditions, for example, of cleanliness of the person, of the home, and of the municipality; of pure air in the home, the office and place of business, in the schoolroom, church, and in all places where people congregate and germs find a breeding place; of drainage, temperature, humidity, altitude and climate, are believed to be very important factors in determining the growth and the physiological capacity of germs to manufacture disease-causing poisons.

I also recognize, but will not discuss at this time, the influence of environment in effecting the individual resistance to disease; the important rôle of mosquitoes and other insects in transmitting the germs of disease from the sick to the well, and the possibility that they, under certain unknown conditions, may, themselves, attenuate the germ they transmit, and in this manner may modify the type of the disease thus caused.—"Texas Medical Journal," January, 1904.

---

CIDER AND JAM IN ENGLAND.—During the past two or three years there has been a great revival of the cider trade. Cider is now being recommended by doctors for rheumatism and gout, and it has become quite a popular drink. The cider of England is usually very good, and is attractively put up. There is no reason why the United States should not get a good share of this trade. It is said that much of the cider for this season's consumption will be made from Canadian apples; in some cases, the apples being cut up and dried in Canada and sent to Devonshire and Herefordshire and submitted to a process to produce "home-made" cider. The jam trade in England is suffering from the increased price of sugar and the failure of the English fruit crop. Jam pulp is being sent from Canada to be put up by local manufacturers, and a large trade in French and German jams is expected.—James Boyle, Consul, Liverpool, England, October 6, 1903.

# PROTECTION OF WATER SUPPLIES.

## THE LINES OF DEFENCE.*

By J. CARTWRIGHT, M. Inst. C. E., Bury.

In recent years, in connection with matters of water supply, the tendency with large communities has been to go further away from the place of consumption, and this course is being rendered increasingly imperative, owing to the growth of the population.

For those towns which can afford to go considerably beyond, to the uninhabited areas, this problem is not so acute, for at present there are nearly 4,000 square miles of wholly uninhabited land in large connected areas in England and Wales, of which 1,400 square miles are found in the mountains of Wales, a like area in the higher moorlands of the Penine chain, and 300 square miles in the Lake District. Over the whole of this area there is a very heavy rainfall, and the districts in question are well adapted for use as gathering grounds; the remainder of the ground is partly high land on the chalk and limestone ranges of southern and eastern England, partly fen and alluvial land, which is comparatively useless for gathering ground—chiefly on account of its low level —and a considerable portion of those eligible areas have already been secured for existing and projected waterworks. But for many authorities the only available sources of supply are not so favorably situated. The land from which the water is collected is largely arable, or, it may be, is sparsely inhabited, and to abandon the works which have been constructed and developed at considerable cost from time to time, as occasion arose, and go elsewhere, is altogether impracticable. Too often, in the past, sources of supply have been selected without any special regard to the character of the land over which the water flows, and very frequently drainage areas have been fixed upon rather on account of their proximity to the district to be supplied, or to their available yield, than on the quality of the water obtainable.

Before expressing an opinion as to the best means of protecting our water supplies, it is, perhaps, necessary that I should point out the possible sources of pollution from which they require to

*Presidential Address before the Manchester Association of Students of the Institution of Civil Engineers, November 18, 1903.

be protected. It has been proved that at altitudes where high clouds form, the atmosphere is so pure that rain water may be considered as being normally free from bacteria and chemically pure, and that it is only when it passes through the lower atmospheric strata, over inhabited districts, that contamination begins. However uninhabited the watershed may be, and the freedom from bacteria which the rain may possess, when it reaches the surface of the ground it immediately becomes liable to pollution of various kinds—animal, vegetable and mineral—in various degrees, depending upon local circumstances; but the dangers arising from absorption by water of such salts and minerals as render it unfit for domestic purposes are not so serious as those derivable from the organized growths that abound in water tainted with decomposing vegetable or animal matter. All surface waters contain micro-organisms that subsist upon dissolved or suspended substances, although the quality of a water exercises a powerful influence upon the growth and predominance of particular species among those that inhabit it; and it is worth noting that wáter which has percolated to some considerable depth, while it may be chemically impure, is often practically free from bacteria, unless it is mixed and contaminated by surface water reaching it direct through fissures, and that, too, even when the surface soil is highly charged with them. But we are not concerned at present in dealing with waters obtained from deep wells. A fertile source of pollution arises from the manuring of land with artificial manures, such as putrid fish and guano, which are more to be feared even than any natural manures; and it is doubtful whether any danger is to be apprehended from cattle grazing on the watersheds, for it is not yet conclusive that certain diseases common to cattle are communicable to man.

Without question, however, the pollution which is most dangerous to man is that produced by himself. The untreated excreta of the human being is always a source of danger, but when it proceeds from a diseased human being it carries with it germs which may easily be communicated to others, and produces disastrous results. Hence the danger arising from the presence of human dwellings on the areas from which our water supplies are obtained, especially if they are situated in the immediate neighborhood of the streams or intakes; for while it is true that a distinct increase in the number of organisms is invariably to be found in the proximity of human habitations, the real danger is not due so much to the increased number (all of which may be harmless)

as to the proportionate increase of the probability of the presence of such as may be pathogenic and prejudicial. Many cases of serious outbreaks of typhoid, cholera and other diseases have been clearly traced to such sources of pollution; especially is this danger aggravated if the water is drawn direct into the mains from the stream or feeder at a point immediately below human dwellings, or from *small* reservoirs; for it is well known that large storage reservoirs not only facilitate sedimentation in the removal of suspended solids and mineral matter in solution, but also effect a very considerable bacterial improvement, especially if flood waters, containing large quantities of decaying vegetable matter, such as leaves and peat, are excluded; and although it is generally believed that running water, after a few miles of flow, will purify itself a high degree, the amount of purification that takes place naturally, such as by oxidization by air and light, is comparatively limited, so far as the disappearance of disease germs is concerned. Their dispersion through the mass of the water and the greater dilution caused by the increasing volume of flow, are probably the greatest factors in the apparent lessening of pollution; and in this country—especially in Lancashire—the streams, except where the topographical conditions are not favorable for the development of large industries, almost invariably receive such quantities of trade refuse and effluents as to stamp them as altogether impossible sources of water supply before they have become sufficiently large to be of value as such.

There are other sources of pollution which I need not allude to, because for the most part they may be controlled and eliminated by the agency of those in direct charge of water undertakings; but, having pointed out some of the principal sources and the liability of our water supplies to contamination, and the possibilities arising from such, the question now presents itself for consideration: How may we protect or safeguard them?

At present the law does not give sufficient protection. Since 1847 there has been no general legislation for the protection of the gathering grounds of waterworks, as distinguished from other watersheds, and while the Rivers Pollution Act, 1876, applies to all rivers and watercourses, it does not contain any special enactments with reference to rivers and streams on which we are dependent for our water supplies; and it might with advantage be made more stringent and effective in preventing the fouling of water intended for domestic purposes, by enforcing penalties in cases of pollution and the supply of unwholesome water.

Some other method of protection must, therefore, be adopted meantime, and it is interesting to notice the different steps taken by water authorities in this country, and also abroad, to attain this end. Germany depends upon filtration alone, and has spent millions in purifying turbid and polluted river waters; France and Austria have striven for mountain spring waters, and have built hundreds of miles of costly aqueducts to secure them; and in the United States, where the importance of protecting the gathering grounds is widely recognized, more favor is shown to making regulations and legal enactments for their protection than in owning them, and in several of the States very stringent measures have been adopted and are imposed. In this country, however, recent efforts have been directed to the purchase of the watersheds, thus securing their complete control and management entirely in the interests of the water consumer, which is certainly much more effective than protecting them by legal enactments.

Manchester was among the first authorities which acquired powers for purchasing the watersheds, although I claim for Bury the distinction of being the first to carry into effect the objects aimed at in thus securing complete control over them; and no doubt the experience gained by the Manchester Corporation in the Longendale Valley induced them to buy up the whole of the watershed draining to Thirlmere, extending to 11,000 acres. The corporation have since been amply justified in their action, more especially as the water is laid on direct from the lake to the consumers. Liverpool possesses the power to acquire the Rivington, as well as the whole of the Vyrnwy, watershed, the latter extending to 22,000 acres, notwithstanding that provision is being made for the whole of the water to be filtered. Birmingham has similar powers over the watersheds of its new supply from the rivers Elan and Claerwen, in Mid-Wales, reaching to 45,000 acres, of which 40,000 consist of open mountain pasture and moorland, carrying not more than one sheep per acre. Glasgow has adopted a different course, by entering into an arrangement with the landowners not to lease land for building purposes around Loch Katrine, nor within a drainage area extending to 20,000 acres; while Edinburgh, although it has a very complete system of filtration, and obtains its water from moorland very sparsely inhabited, protects its watersheds by contracts with the proprietors of the land and by legal enactments.

Other places might be enumerated which have adopted this precautionary measure, but there are many more which depend

solely upon the efficiency of sand filtration. London may be cited as the chief example of this class, the Thames water, after extensive sand filtration, forming the principal supply; and in this case the area above the intakes is far from being uninhabited or uncultivated. Indeed, if one is to judge the merits of the two methods solely by a comparison of the prevalence of communicable diseases, like typhoid, or the death rate of those towns which represent both, his verdict must be in favor of the latter method. The typhoid case rate of London, for example, is remarkably low, being seventy-two, as compared with an average of 115 per 100,000 per annum for 219 towns in England, and there is no evidence to show that it has suffered to any appreciable extent from drinking the water drawn from a tainted area. The water supply of Hamburg is another instance of river water, after filtration on scientific principles, being chemically and bacteriologically as pure as it is practicable to obtain, and it must be conceded that those towns which drink river water, and depend upon the efficiency of filtration for its quality, are, generally speaking, the most immune from enteric fever. The conclusion from this evidence is, that bacterial purification in sand filtration, if carried out under skilled supervision, is effective in reducing pathogenic organisms, although it does not absolutely prevent their passage into the filtered water. Much depends upon the efficiency of the filter, which, unless properly constructed and worked, may be productive of more harm than good; several epidemics have been traced to the use of filtered water which had been polluted before filtration, showing that the filters had failed to remove the impurities, and that it is unsafe to rely upon them alone; and cases are not unknown where water has been grossly contaminated by being passed through filters. The health of towns and cities like London and Hamburg is largely dependent upon the thoroughness and efficiency with which the filtering of the water is carried out. If through carelessness or accident the water were allowed to pass unfiltered, or the filtering media of one filter-bed were allowed to become cultivation areas for pathogenic organisms, the result would soon be apparent in an epidemic—a condition of affairs which is not ideal.

It seems to me that, to prevent all possibility of pollution to our water supplies at their source, it is necessary for water boards or authorities—whose imperative duty it surely is to ensure this—to have full control over the watershed areas from which their supplies are obtained, and, where possible, to divert or stop up all pub-

lic roads and footpaths. Where this is impracticable, to make provision for the drainage from public roads to be carried below the storage reservoirs or intakes, to clear all human dwellings off the catchment areas, and, as far as possible, prevent the incursion of tramps and others over them, and while utilizing them as pasture lands to prevent, by fencing, the access of cattle to the feeders or streams, and to take precautions against decaying vegetable matter being carried during floods into the storage reservoirs. This constitutes the first line of defence, and, if perfectly maintained, there will be absolutely no need for further precautions. But, unfortunately, it is difficult, and increasingly becoming so, if not altogether impossible, even while possessing full control over the catchment areas, to prevent a certain amount of trespass by people who, as in the case of the Maidstone epidemic, may be the means of polluting an otherwise wholesome source of supply. Recourse must, therefore, be also had to a second line of defence, that is, efficient filtration, not as we usually see it carried out in this country, but conducted on scientific principles, under competent supervision and systematic and frequent inspection. To some this will doubtless appear altogether unnecessary, although in imperial affairs the wisdom displayed in providing a second line of defence, in view of the possibility of the temporary or complete failure of the first line, is seldom questioned, and surely the protection of the first necessity of life is as important as that of national prestige. At all events, it is the policy that is being carried out by the Bury and District Water Board, to which I am the responsible adviser, and also by important water authorities like Liverpool, Birmingham, Leeds, and others; and as the danger of relying exclusively on one or other of the systems is apprehended, the more enlightened policy of adopting and efficiently maintaining both will be proportionately and increasingly pursued.

## THE ALLEGED INJURIOUS EFFECTS OF PRESERVATIVES IN AMERICAN MEATS AND DRIED FRUITS IN GERMANY.

Report of United States Deputy Consul-General Hanauer, Frankfort, Germany, October 3, 1903.

Protests against the action of police authorities in seizing or forbidding the sale of American dried fruits because they contain an admixture of sulphuric acid are made in the annual reports of many chambers of commerce throughout Germany. The chambers claim that not a single case has occurred where injury

resulted from said admixture. On the contrary, it is said it helps to preserve the fruits, which are a popular article of food. The Chamber of Commerce of Mannheim, in conjunction with many other chambers of commerce, addressed the imperial sanitary bureau at Berlin on the subject of "American dried fruits" and the police orders inhibiting their sale. The chamber refutes the allegation that the use of sulphuric acid as a preserving means is injurious, and petitions the sanitary bureau to fix the amount of acid allowable in the preservation of these fruits, which are a necessary article of consumption.

The report of the Mannheim Chamber of Commerce speaks also of the scarcity of the meat supply and the greatly lessened consumption of beef and pork, owing to their high prices forcing the working classes to eat horse flesh.

The report of the chamber of commerce for the State and city of Hamburg says on the subject of the restrictions on the importation of meats that they are Agrarian measures, instituted for the purpose of forcing high prices for domestic meat, and are not justifiable on sanitary grounds. It mentions particularly "corned beef," against which nothing can be alleged as being hurtful to consumers, and it quotes the opinions of experts to show that the small amount of boracic acid used for the preserving of the meat is not injurious and is actually indispensable. The chamber instituted inquiries among the Hamburg shipowners, who said that since foreign canned meats have been used on their vessels the health of the crews has been much improved, but after trial it was found that the canned meat put up in Germany is inferior to the foreign article. The report further expresses the hope that the Federal Government will soon realize the fact that by keeping out cheap foreign meat a serious injury is done to the working classes of Germany and that such injury must create intense feeling and strengthen the Social-Democratic party.—Consular Reports, January, 1904.

---

DISINFECTING APPARATUS.—A new apparatus, of French origin, is based upon the evaporation of formic aldehyde. The solution of formic aldehyde is boiled in a vessel heated by spirit or other lamp, the escaping vapors being led through a tube made flexible, so that it can be passed through the keyhole of the door of the room to be disinfected. A gauge shows the level of the liquid, and scales are provided to show the amount of liquid to be evaporated to disinfect the room properly.

# OTHER SOURCES OF TYPHOID INFECTION THAN THROUGH THE MEDIUM OF DRINKING WATER, AND HOW TO GUARD AGAINST THEM.*

By SEALE HARRIS, M.D., of Union Springs, Ala.

I am very glad, indeed, that our president, in assigning my theme as one of the "regular reporters" for this meeting of the State Medical Association, selected that of "Other Sources of Typhoid Infection Than Through the Medium of Drinking Water, and How to Guard Against Them," because from my observation, and from the recent researches made in large epidemics of typhoid fever, I am convinced that the medical profession greatly exaggerates the part that drinking water plays in the dissemination of that disease. The subject is, therefore, a "congenial" one to me.

Sanitarians, in writing learned theses on the etiology of typhoid, are wont to make such statements as the following: "Show me a city's mortality statistics from typhoid, and I will tell you the character of its water supply," and "from any given case of typhoid fever the cause can, and should be, discovered"; but the fact remains that in very many epidemics, and in more of sporadic cases, the cause is frequently from other sources than drinking water, or it is not discovered at all. Recent investigations seem to show that, except in the cities, the germs of typhoid are disseminated more in other ways than through the medium of drinking water. I do not mean to deny that typhoid fever is largely a water-borne disease, but in this article I am not expected to discuss its spread through drinking water—all of us know too much about that side of the question—though in considering the other sources of typhoid infection, I shall mention some methods of conveying the disease where polluted water is indirectly the cause, though the infection is not taken into the system in drinking water.

The great epidemics of typhoid fever that visited the concentration camps of the United States Volunteer Army during the Spanish-American War, in 1898, were carefully studied by a board of army surgeons, consisting of Majors Walter Reed, Vic-

*Transactions of the Medical Association of the State of Alabama, 1903.

tor C. Vaughan and Edward O. Shakespeare. In 92 regiments investigated there was a total number of 107,973 men; 20,738, or nearly 20 per cent., developed typhoid fever; and of these, there were 1,580 deaths—a mortality rate of 7 per cent. of those who contracted the disease. This board examined the records of all these cases, they visited all the cities where the camps were located, they investigated carefully the source and quality of the water supplies of all the camps, also their food supplies, and the methods of disposing of their excreta—in fact, they investigated everything bearing upon the cause and spread of typhoid fever among our soldiers, more of whom suffered and died from typhoid fever than from Spanish bullets. All the members of this board were sanitarians of renown and great experience, and having been given every possible facility for making investigations, their conclusions are of great value and have almost revolutionized our ideas regarding the origin and spread of typhoid fever. Their report, which was published by the Government, and which may be obtained free by application to the Surgeon-General of the army, is one of the most valuable contributions to the literature of typhoid fever that has been published in years. Their report presents so forcibly some of the facts which I desire to bring out that I shall quote freely from it. Among the general conclusions of this board are the following statements:

"Infected water was not an important factor in the spread of typhoid fever in the national encampments in 1898."

"It may be stated in a general way that the number of cases of typhoid fever in the different camps varied directly with the methods of disposing of the excretions."

According to these distinguished authorities on typhoid, the most active agents in the dissemination of the disease in over 20,000 cases were: Flies, personal contact and dust, though they thought that in some of the camps the drinking water was infected.

There are many sources of typhoid infection other than through the medium of drinking water, the more important of which I shall discuss under separate headings.

*Milk.*—Infected milk is a fruitful source of typhoid fever. Eberth's bacillus will thrive and multiply in milk without affecting its taste or appearance. It will live for days even in sour buttermilk, and fresh milk is an excellent culture medium for the germ. Some have thought that the germ can be ingested by the cow in drinking water and be excreted in the milk without destroying its vitality. However, this is hardly probable, unless

the cow actually has typhoid fever, and there is no evidence to prove that cattle are subject to the disease. It seems possible that the germs might be taken into the stomach in water, and not having been destroyed in the alimentary canal of the cow, be excreted in the feces, but the germ has never been demonstrated in the excreta of the cow. Bacterial examination of milk has frequently shown the colon bacillus, and it seems possible that the typhoid germ could infect milk in the same way; that is, by the udders becoming soiled with the feces containing the germ.

Milk may be infected in any of the following ways: From the udder or teats of the cow, from the hands of the milkman, from milk can and pans which have been washed in infected water, from milk diluted with infected water by unscrupulous dairymen, from dust holding in it the typhoid bacillus, and by infected flies.

Pastures for cows are commonly located in the marshes and lowlands, where the soil is fertile and the grasses grow luxuriously and the drainage from the surrounding country, or from the town, flows into the shallow streams which traverse them. When the rains come they wash the sewage into these streams, the pastures are flooded, and puddles of water remain for some time. The cows go into the streams for water, or lie down in the puddles, which, if infected, can readily in many ways infect the udder or teats and eventually infect the milk. If the milkman happens to be nursing a case of typhoid fever, and is not as careful as he should be in disinfecting his hands, he can easily infect the milk. A number of cases have been traced to this source. If the milk vessels are cleansed in polluted water, as can be done, for instance, by washing them in the shallow streams in the pasture, they can infect the milk contained in them.

During my college days an epidemic of typhoid fever occurred among the students who boarded at a certain hotel, fifteen or twenty of whom contracted the disease. They used the same drinking water that was drunk by more than five hundred other students. A committee from the faculty was appointed to inspect the hotel premises, but nothing was found there that could account for the epidemic. Upon further investigation it was found that the cows which belonged to the proprietor of the hotel were pastured in a lowland, through which traversed a shallow stream. The cows were milked in the pasture; their udders and milk vessels were cleansed in the water from this infected stream. There had been some cases of typhoid fever in houses located above and near the stream, and evidently the rains washed the excreta into

the stream which flowed through this meadow, thus polluting the water and indirectly the milk. The committee reported that the epidemic was probably due to infected milk, whereupon the proprietor discontinued the use of the milk from the cows which were pastured in this meadow, and no further cases of typhoid developed among the students.

In the towns and villages, most of which have no sewerage systems, the cows are almost invariably pastured in the lowlands of the suburbs of the town, where all the filth and impurities drain directly into the streams that supply the cows with water. It certainly seems reasonable that the milk can become contaminated in some of the ways that I have mentioned, and I am convinced that much of the typhoid fever in such towns and villages, as well as in the rural districts, is due to infected milk.

*Flies.*—The common house fly has been shown to be a frequent carrier of the typhoid germ. He has for many years been under suspicion of being guilty of that crime, but he has been recently found guilty beyond a reasonable doubt, and has therefore been condemned to death, or to banishment from homes which would be free from typhoid fever.

Majors Firth and Horrocks, two British army surgeons, examined flies, which had been allowed to crawl over typhoid stools mixed with fresh cultures of the bacilli, and all of those examined contained the germs of typhoid on their legs, heads, wings or bodies. It has been supposed that the fly may take the germs into his stomach and give them off in his excrement, but these observers failed to find the typhoid germs in any of the excreta of flies that had been fed on typhoid stools.

The observations of Dr. Alice Hamilton, of Chicago, are of more practical value, and they leave no doubt but that the fly is a carrier of the typhoid germ. During the recent epidemic of typhoid fever in Chicago, she examined the conditions in the locality where there were the greatest number of cases. She caught flies from two undrained privies, on the fences of two yards, on the walls of two houses, and in the room of a typhoid patient. These flies were placed in eighteen sterilized tubes containing suitable culture media for the growth of the typhoid bacilli, and from five of these tubes the germs were isolated. At the time that the collection was made from one of these privy vaults, no fresh typhoid discharges were being emptied into it, so that the presence of the typhoid bacilli on the legs of the flies found there apparently proves that the germs already in the vault

were alive and multiplying, or that the urine or feces of convalescing or recovered cases of typhoid still contained the typhoid bacilli.

We all know how flies swarm around privy vaults, cesspools, or other places where there is human excrement, and they have often been seen to fly directly from such places into kitchens and light upon food which was being prepared for eating. With undisinfected typhoid discharges being deposited in such places it can readily be seen how flies can infect food.

During last summer, in the town of Union Springs, which is supplied with water from an artesian well nine hundred feet deep, there occurred a case of typhoid, the origin of which we were not able to satisfactorily explain. During the next two months there developed three cases in two families on adjoining lots. It so happened that none of the three persons who contracted typhoid saw the first patient referred to. They were drinking the same water as drunk by over three thousand other people, yet there was only one other case of typhoid in the town at the time, and they all had different milk supplies. The flies in that particular neighborhood were very numerous because of the fact that there is a livery stable on the next block, so that it seems probable that flies must have been the carriers of the infection in these cases.

The Army Board above mentioned makes the following statement regarding the dissemination of typhoid by flies among the soldiers in the Spanish-American War:

"Flies were undoubtedly the most active agents in the spread of typhoid fever. Flies alternately visited and fed on the infected fecal matter and the food in the mess tents. More than once it happened that when lime was scattered in the fecal matter in the pits, flies with their feet covered with lime were seen walking over the food. Typhoid fever was much less frequent among messes who had their tents screened than it was among those who took no such precautions. Typhoid fever gradually died out in the fall of 1898 in the camps at Knoxville and Meade, with the disappearance of the fly, and this occurred at a time of the year when in civil practice typhoid fever is generally on the increase.

"The first pits at Knoxville contained, before the first twenty-four hours had passed after the arrival of the troops, fecal matter infected with the typhoid bacillus. Flies swarmed everywhere. Instead of abating, the disease increased. The soldiers were using the same water used exclusively by the citizens of West Knoxville, and among the latter there was not, at that time, a case of typhoid fever."

*Dust.*—It is perfectly possible for the typhoid bacillus to dry and become adherent to particles of dust and thus get into the atmosphere. Numerous observers have demonstrated that the typhoid germ can retain its vitality in dry dust for a variable length of time. Uffleman has shown that it may live as long as sixty days in dry soil, and in moist soil it may live and propagate for years. The soil may be polluted with the typhoid germ either by the urine or feces of a typhoid patient. It has been found that the feces of a person developing typhoid may contain the germs in large numbers before any symptoms arise to indicate that he has the disease. In from 20 to 30 per cent. of cases of typhoid fever the urine contains the germs. Gwyn reports ten cases of typhoid bacilluria in which pure cultures of the micro-organisms were found in numbers varying from 10,000,000 to 500,000,000 to the c.c. The urine is sometimes so full of the germs that it becomes cloudy. I have recently had such a case, and I may add that it resulted in death. In some cases the urine may contain the germ for months after the patient is well of the disease. So the typhoid fever patient before he is sick, and after he is well, may scatter the infection.

It is not probable that dust is carried for great distances in the atmosphere except in fierce winds, though dust is certainly one of the means of conveying the infection. Infected dust in rooms where typhoid fever patients are confined may cling to the hands, faces, or clothing of those exposed, or it may get into the secretions of the mouth and nose, and later be swallowed with food or water. When the floor is swept off, or the rugs and carpets dusted, as is frequently done by people who are ignorant of the danger from infected dust in the typhoid sick-room, the germs may fall on food or milk, or even into the family's drinking water, and those who have not been in the room may thus become infected.

Recently there have been several cases in which the typhoid germs were inhaled into the lungs, there producing a true typhoid pneumonia, without any involvement whatever of the intestinal tract. One of these cases occurred at the Johns Hopkins Hospital, and was diagnosed and treated as an ordinary case of broncho-pneumonia. The autopsy showed the characteristic lesions of a broncho-pneumonia, with large numbers of the typhoid bacilli in the lungs, blood and spleen, but there was no lesion of the intestinal tract. There have been many other cases of typhoid fever reported in which there was no involvement of the intestines, though the Eberth bacillus was found in the lungs, blood, spleen,

gall-bladder and meninges. In fact, there is much evidence to warrant the belief that the infection of typhoid is not infrequently taken into the lungs, and therefore we should guard against inhaling dust that has had the opportunity of becoming infected with the typhoid germ.

Eugene Wasden, of the Marine Hospital Service, asserts his belief that in the majority of cases of typhoid the lungs are the infectionatria, and that colonies of the bacilli first locate at some point in the respiratory tract, generally the lower lobes of the lungs. He says that in practically all cases typhoid sepsis occurs early in the disease, and that the lesions in the intestines do not occur until after the germs get into the blood. He reports his last series of (*27*) cases, in all of which he was able to demonstrate the primary pneumonic focus, and in them all he found the lung symptoms characteristic of a broncho-pneumonia or a subacute bronchitis. He thinks that dust is the great disseminator of typhoid fever, and remarks that "it would be better to filter the street-sprinkling water supply and allow the drinking of hydrant water."

As to the part that dust played in spreading typhoid fever in the concentration camps during the Spanish-American War in 1898, I will quote the following from the Army Commission's report:

"The shell roads through the encampment at Jacksonville were ground into the finest dust by the heavy army wagons. The scavenger carts carrying the tubs filled with fecal matter passed along these roads, and their course could often be traced by the bits of feces falling from the tubs. Other vehicles ground up the fecal matter and dust together and the winds disseminated these particles here and there. Men inhaled the dust. It was deposited in food in mess tents by the roadside, and men ate the dust. Pollution of the soil by those suffering with typhoid fever was of frequent occurrence. Cases of this disease under the diagnosis of malarial fever were repeatedly treated throughout their sickness by the regimental surgeons. Patients convalescing were also returned to their respective companies. Under these conditions there must have been abundant opportunity for contamination of the camp site with the specific germs. We are, therefore, inclined to the opinion that infected dust was one of the factors in the dissemination of typhoid fever."

*Contact Infection.*—A number of physicians hold to the theory that typhoid fever is contagious in some unknown manner, and in

upholding their position they point to the fact that it is a frequent occurrence for those who are nursing typhoid to contract the disease; and that with a water supply of undoubted purity, other persons in the house with a case of typhoid fever contract the disease. With our present knowledge of the habits and life history of the typhoid bacillus, the origin of these can be easily explained.

It has been proven that typhoid bacilli can live and retain their virulence for two or three months on cotton, woolen and linen cloth. Persons exposed to a case of typhoid may carry the germs on their clothing or person for weeks and thus contract the disease and carry it to others. Nurses, in handling the discharges and soiled linen or bedding of a patient sick with typhoid fever, may get the germs on their hands, and unless they are careful about disinfecting them, in handling their own or other people's food may also be the means of conveying the infection. The typhoid bacilli may live for weeks under the finger nails.

Under the heading of dust I necessarily had to discuss some phases of contact infection and I will not dwell further on it, though in supporting the views which some may consider unorthodox, I cannot refrain from quoting the following paragraph from the Army Board's report:

"It is more than likely that men transported infected material on their persons and in their clothing and thus disseminated the disease. We have condemned the method as followed in many of the camps of detailing men from the ranks to act as orderlies in the hospitals. In some of the commands it was customary to detail a hundred or more men from the line every morning. These men went to the hospitals and handled the bed-pans used by the persons sick with typhoid fever, and at night returned to their comrades. The most of these men were wholly ignorant of the nature of the infection or the methods of disinfection. In fact, at one of the division hospitals we saw orderlies go from the hospital and partake of the mid-day meal without even washing their hands. These men handled not only the articles of food which they ate, but passed articles to their neighbors. It seems to us that a more certain method of disseminating an infectious disease could hardly have been invented. Certain tents were badly infected and the majority of their inmates had the disease, while other tents wholly escaped. Blankets and tentage became soiled with the typhoid discharges, and in this way the disease was propagated and carried by the company wherever it went. We there-

fore believe that personal contact was an important factor in the spread of the disease."

*Uncooked Vegetables.*—Celery, water-cress, lettuce, and other vegetables which are eaten without cooking may become infected with the typhoid germ, either from the soil in which it is grown or from being washed in polluted water. Several epidemics from this source have been reported, notably the one at Northampton, Mass., in an insane asylum in which there occurred a large number of cases of typhoid where the source of infection was seemingly traced to eating celery which had been grown in beds fertilized with "night soil."

Oysters may become infected in their beds, or in polluted fresh water into which they are sometimes placed to undergo the process known as "plumping." A number of typhoid epidemics have occurred which were undoubtedly due to infected oysters. Last December at Portsmouth, England, fourteen of the prominent guests who had attended the mayoralty banquet developed typhoid fever. Upon investigation it was found that the Emsworth oyster beds, from which were taken the oysters served at the banquet, were located where the town's sewage was discharged directly over them; and as this sewage was almost certainly polluted with the typhoid germs, it seems certainly almost probable that the oysters became infected in that way.

*Ice.*—Freezing does not actually destroy the typhoid bacillus, though it unquestionably inhibits its growth and virulence. However, it has been known to live and retain its virulence in ice for more than a hundred days. Manufactured ice is not likely to become infected, since it is made largely from sterilized water, but the ice from lakes, ponds and streams, which is stored up in winter and kept until spring, is almost as likely to be infected as drinking water from the same sources, though, as I have said, the cold of ice greatly lessens the virulence of the typhoid germs and in four months will destroy them.

The prevention of disease is the highest and noblest art in our profession, and when physicians and the laity realize that typhoid fever is a highly infectious disease and so become imbued with the importance of preventing its spread, then will we hope to make it one of the rare diseases. I fear that the majority of physicians are too negligent in the prophylactic management of typhoid fever. It would be better for the world if physicians sent for in cases of typhoid fever were to prescribe methods for preventing other members of the family from contracting the disease, and let the

patient go without medicine, than to do as is frequently done by physicians who ought to know better, that is, dose the patient with medicines, which in the majority of cases do no good, and make no effort to find the source of the infection, nor use any methods to prevent its spread. That is a very sensible law in North Carolina, which makes it a criminal offence, punishable by fine or imprisonment, for a physician who is treating a case of typhoid fever to fail to instruct the attendants regarding the methods of disinfecting the discharges of the patient. If a physician has not the moral courage to do his duty in preventing disease there should be laws to "hand the wretch to order."

How can we guard against the infection of typhoid fever in sources other than drinking water? I shall take the position that the place to begin is with the patient, because there you have a known focus of infection.

The typhoid fever patient should be isolated, as we do other infectious diseases, in a well-ventilated room, preferably on the sunny side of the house. Fresh air and sunlight are more potent disinfectants than many of those sold on the markets. Window curtains, pictures and other hangings, carpets, rugs and unnecessary furniture, which catch dust and hold the infection, should be removed from the room. His personal and bed linen, upon becoming soiled, should be immersed in an antiseptic solution before being taken from the room, and before use again should be boiled for not less than half an hour. The excreta should be carefully disinfected. Simple immersion in an antiseptic solution is not sufficient to destroy the typhoid germs in feces—it should be kept in contact with the solution for several hours. The bedpans and urinals should constantly contain a small amount of the antiseptic solution, and the discharges should immediately be placed in another vessel containing at least two parts of the solution to one of the feces. The feces should be thoroughly broken up and mixed with the disinfectant solution, and should so remain for at least four hours before being placed in the water-closet, if the house is connected with a sewer; if not, it may be covered with dry earth at a place where the drainage will not go into the water supply. Under no circumstances should the excreta of a typhoid patient be placed in a privy vault, or exposed in any place where it can be reached by flies, or becoming dry get into the atmosphere as dust. In other words, do not depend entirely upon chemical disinfectants to destroy all the typhoid bacilli in the discharges of any patient suffering with that disease.

Urotropin given internally, in doses from five to ten grains every four hours, will completely sterilize the urine, and since in some cases of typhoid bacilluria the germs may be found in the urine for weeks after convalescence, the urotropin should in those cases be kept up for several weeks after the patient's recovery. Probably the best chemical agent for disinfecting urine after it has been voided is formalin (a 40 per cent. solution of formaldehyde in water). One teaspoonful added to half a pint of urine will completely sterilize it in a few minutes. For disinfecting feces with formalin use two parts of a solution containing one tablespoonful of formalin to one quart of water to one part of feces.

Carbolic acid (3 per cent. solution), preferably with from 3 to 5 per cent. of common salt, or with a small quantity of a mineral acid, next to formalin is probably the best disinfectant for destroying the germs in typhoid excreta, and has the advantage of being cheaper than the formalin.

The cresols, which occur as impurities or by-products in the manufacture of phenol, are more powerful germicides, and less toxic to man, than the carbolic acid, and since they are also cheap, are coming into general use. Creolin, which contains 10 per cent. cresols held in solution with soap, is a very effective germicide when used in a 5 per cent. solution. Lysol contains 50 per cent. of cresols with neutral potash soap, and in a 1 per cent. solution is as powerful as a 5 per cent. solution of carbolic acid. The crude carbolic acid, since it contains as an impurity the cresols, is preferred by some, who claim that it is not only cheaper but a more efficient germicide than either the pure carbolic acid or the cresol preparations.

Mercuric chloride is used perhaps more than any other agent for disinfecting, and is one of the most powerful antiseptics that we have, yet in disinfecting feces is it probably almost inert. It forms upon the addition of organic matter the albuminate of mercury, which coats over the substances and temporarily inhibits germ life, but it has very little powers of penetration. With feces it likely forms the sulphide of mercury, which has very slight bactericidal properties, before it has time to have much effect in destroying the bacilli in the feces. The use of mercuric chloride in typhoid fever should be limited to disinfecting the hands and in washing off the floors, walls and furniture.

Nurses after handling the patients' soiled linen, or the bedpans and urinals, should use great care in disinfecting their hands, particularly before taking food. Simply washing the hands is

not sufficient; the space under the nails should be carefully cleansed, and the hands after thorough washing in soap and hot water should be bathed in an antiseptic solution, preferably a·1 to 1,000 solution of mercuric chloride. Those who are nursing a typhoid patient, or who are constantly in the room with him, should change their clothing before coming in contact with others.

After the death or recovery of a patient the room should be disinfected as in other infectious diseases.

In guarding against milk infection it is well worth the while for every family to examine carefully into the milk supply. Dairies which supply milk to cities should be regularly inspected by an efficient medical officer. Cows should not be pastured on low-lands upon which the sewage of small towns is drained. Milk vessels should always be washed in boiling water before being used. Milkmen should use great care in cleansing their hands and the udders of cows before milking. In case of an epidemic of typhoid fever, or even with a single case in a family, it is best to boil the milk and protect it from the dust and flies after it is thus sterilized.

The proper disposal of the excreta of the typhoid patient will, in a great measure, prevent infection from dust. However, it should be remembered that the sputum of the typhoid patient may contain the Eberth bacillus, and it should be burned or disinfected as we do in tuberculosis of the lungs.

Flies present a greater problem. Of course, if the excreta is disinfected and placed where the flies cannot reach it, they cannot carry the infection; but every fly should be regarded with suspicion, because our neighbors, even at considerable distances from our homes, may not take any precautions in disinfecting the excreta of their typhoid sick. We should, therefore, screen with great care our windows and doors, particularly in the rooms where food is kept, prepared or served. Something may be done to destroy flies in their breeding places, which is largely in the excreta from horses, though they breed to some extent in human excrement. Cities should adopt ordinances requiring the proprietors of livery stables, and individual owners of horses, to screen the piles of horse manure, or to keep them covered in such a way that flies cannot breed in them. Chloride of lime, which will destroy the larvæ of the house fly, should be kept in stables by the barrelful, and every few days should be sprinkled over the horse manure. These methods of lessening the number of flies are

practical and inexpensive, and should be carried out on farms as well as in cities.

Typhoid infection from uncooked vegetables would be very much lessened if the practice of using human excrement, or "night soil," as a fertilizing agent were not permitted, particularly in growing vegetables which are eaten without cooking. Before eating any raw vegetables they should be thoroughly washed in water of known purity, and in boiling water where it will not destroy their flavor.

Oysters which are suspected of being infected should never be eaten raw. Oyster beds should not be allowed near the openings of city sewers, and oysters in being "plumped" should be placed in water of known purity.

Ice, in its manufacture, should be made only of pure water, and that which is obtained from ponds, lakes and streams should not be cut near the outlets of sewers, or at other places where the water is likely to be polluted. However, ice is such an infrequent source of infection for typhoid fever that we may almost wholly disregard it as a factor in the production of the disease.

Finally, as I have said before, the prevention of typhoid fever should begin by limiting the infection to the patient under treatment; and when physicians do their full duty in instructing the laity regarding the infectiousness of typhoid fever, as well as to see that proper methods are carried out to prevent its spread, we may almost hope that typhoid fever will cease to be one of our endemic diseases.

---

CHANGED THE MOOD.—Gen. Leonard Wood attended in his boyhood a school in Middleborough, Mass., and in Middleborough, says the New York "Tribune," they will speak of the direct and original mind that the boy had.

"I remember one day in school," said a Middleborough man recently, "Wood was called up in the grammar lesson. The teacher said:

" 'Leonard, give me a sentence, and we'll see if we can change it to the imperative mood.'

" 'The horse draws the cart,' said Leonard.

" 'Very good. The horse draws the cart. Now change the sentence to a neat imperative.'

" 'Gee-up,' said young Wood."

# THE HOME IN ITS RELATION TO THE TUBERCULOSIS PROBLEM.*

By WILLIAM OSLER, M.D.,
Of Baltimore, Md.; Professor of Medicine Johns Hopkins University.

## I.

In its most important aspects the problem of tuberculosis is a home problem. In an immense proportion of all cases the scene of the drama is the home; on its stage the acts are played, whether to the happy issue of a recovery, or to the dark ending of a tragedy, so commonplace as to have dulled our appreciation of its magnitude. In more than four hundred homes of this country there are lamentations and woe to-night: husbands for their wives, wives for their husbands, parents for their children, children for their parents. A mere repetition of yesterday's calamities! and if the ears of your hearts are opened you can hear, as I speak, the beating of the wings of the angels of death hastening to the four hundred, appointed for to-morrow. That this appalling sacrifice of life is in large part unnecessary, that it can be diminished, that there is hope even for the poor consumptive—this represents a revulsion of feeling from an attitude of Oriental fatalism which is a triumph of modern medicine. Our French brethren have made the present position of the question possible. Laennec, the father of modern clinical medicine, gave us the pathology of the disease—and much more. While Galen, Frascatorius, Morton and others believed strongly in the contagiousness of phthisis, it remained for Villemin to demonstrate its infectiveness by a series of brilliant experiments which made Koch's work inevitable; while to Verneuil, Chauveau, Nocard, Brouardel and others we owe the initiation of those local and international congresses which have done so much to rend the veil of unfamiliarity, and to educate the public and the profession to a point at which scientific knowledge has become effective. It seems a law that all great truths have to pass through a definite evolution before they reach a stage of practical utility. First the pioneers, seeing as through a glass darkly, groped blindly for the truth, but worked

*A lecture delivered under the auspices of the Phipps Institute, Philadelphia, Dec. 3, 1903.

so effectually that by the seventh decade of the nineteenth century we had a clear pathology of tuberculosis and an accurate symptomatology; while in each generation a man had not been wanting, who, like Sydenham, or George Bodington, appreciated the essentials of treatment, as we recognize them to-day. Then Villemin and Koch demonstrated the truth of the infectivity of the disease and the presence of a specific germ. Watchers on the towers, like the late Austin Flint, a life-long student of the disease, welcomed the announcement as the much wished for fulfilment of a prophecy; but, as Plato shrewdly remarks, we are not all awake when the dawn appears, and many in this audience, like myself, had to see the truth grow to acceptance with the generation in which it was announced. It is a horrible thought, but very true, that we reach a stage in life, some earlier, some later, in which a new truth, a perfectly obvious truth, cannot be accepted; and the work of Villemin and of Koch fared no whit better with the seniles and the pre-seniles of the seventh and eighth decades of the last century than did Harvey's immortal discovery in his day, or for the matter of that, did Lister's great work. And now we are in the third or final stage, in which the truth is becoming an effective weapon in the hands of the profession and of the public. The present crusade against tuberculosis, which is destined to achieve results we little dream of, has three specific objects: First, educational—the instruction of the profession and the instruction of the people; second, preventive—the promotion of measures which will check the progress of the disease in the community; third, curative—the study of methods by which the progress of the disease in individuals may be arrested or healed. The three are of equal importance, and the first and the second closely related and interdependent. The educational aspects of the problem are fundamental. Nothing can be done without the intelligent co-operation of the general practitioners and of the community, and it is a wise action on the part of the Phipps Institute to take up actively this part of the work, and to spread a sound knowledge by lecture courses and by publications. It is not too much to say that could we get, on the part of the doctors throughout the country, an early recognition of the cases, with a practical conviction of the necessity of certain urgent and obvious measures, and on the part of the public attention to hygienic laws of the most elementary sort—could we in this way get the truth we know into the stage of practical efficiency, the problem would be in sight of solution.

Of late years there have been done in this country three pieces of work, relating to tuberculosis, of the first rank—that of Trudeau in the Adirondacks, enforcing on our minds the importance of the sanitarium treatment of early cases; that of Biggs and his associates in the New York Board of Health in demonstrating how much can be done by an efficient organization; and, thirdly, the work of Lawrence F. Flick, the Director of the Phipps Institute, in demonstrating by a long and laborious research the dangers of the house in the propagation of the disease. In casting about for a subject it seemed to me most appropriate to discuss those aspects of the problem which concern the home in its relations to the disease, since after all the battlefield of tuberculosis is not in the hospitals or in the sanitaria, but in the homes, where practically the disease is born and bred.

II.

The germ of tuberculosis is ubiquitous; few reach maturity without infection; none reach old age without a focus somewhere. This is no new opinion. Gideon Harvey, in his *Morbus Anglicus* (1672, 2d Ed.), says: "It's a great chance, we find, to arrive to one's grave in this English climate, without a smack of a consumption, Death's direct door to most hard students, divines, physicians, philosophers, deep lovers, zealots in religion," which is the English equivalent of the German popular saying, "Jedermann hat am Ende ein bischen Tuberculose." This may seem an exaggerated statement, but the records of Naegeli demonstrate its truth. After all, it is only from the post-morten table that we can get a true statement of the frequency of tuberculosis in the community. It has long been known that a very considerable percentage of persons not dying from consumption have the lesions of tuberculosis. The records have ranged in different series from 7.5 per cent. (Osler) to 38.8 per cent. (Harris). But these studies were not made directly with a view of determining the presence of tuberculosis. They were the ordinary every-day observations of the post-mortem room. The only series which we have dealing with this question in a satisfactory way is the study of 500 post-mortems in Professor Ribbert's Institute in Zurich, by Naegeli. It is to be borne in mind that in his work special examination was made of every organ of the body, sections were made of all parts with the greatest care, and the individual lymph glands particularly inspected. Tuberculous lesions were found in 97 per cent. of the bodies of adults.* He gives a very

*Virchow's Archiv, 1900, Bd. CLX, page 426.

interesting curve showing the incidence at different ages. Up to the fifteenth year there was only 50 per cent., then there was a sudden rise in the eighteenth year to 96 per cent., with a slow rise, so that by the fortieth year a tuberculous focus was found in everybody. This careful research demonstrates the extraordinary susceptibility in man to tuberculous infection, and an equally extraordinary degree of resistance. In the tuberculin experiments of Franz on healthy Austrian soldiers a reaction was shown in over 60 per cent., so that we must accept the conclusion that tuberculous infection, latent tuberculosis, is much more extensive than is the manifest disease.

One interesting point is that we are never left long in peaceful possession of a satisfactory belief about the modes of infection in tuberculosis. No sooner had the pool got quiet and we had settled into a comfortable conviction of the unity of human and bovine tuberculosis, than Koch stepped in and troubled the waters with his views on their dual nature; and now, just as the commotion was subsiding, von Behring stirs the waters by referring all tuberculosis to the milk-jug. But none of these investigations have diminished the importance of the home as the chief source of infection, the place in which the conditions favoring contamination are most common, particularly among the poor. Nor do I think that we can give up the view of aerial convection and of primary inhalation infection in a large proportion of the cases. Figures are, of course, tricky playthings, but it does seem that the overwhelming evidence of the prevalence of bronchial and pulmonary tuberculosis in children is in favor of the older views. After all, how rare is intestinal tuberculosis as a primary lesion, and if, as von Behring supposes, there is a special vulnerability of the bowels in childhood, we should expect a much larger number of cases. It is quite possible, as he has shown, and as Ravenel has demonstrated, that the bronchial and cervical lymph glands may be the first attacked in an animal infected through the intestines; yet the incidence in childhood of respiratory disease is so large, and the incidence of intestinal lesions is so small, that it counts strongly against von Behring's new views. In fact, primary intestinal tuberculosis is extraordinarily rare. Koch states that there have only been ten cases in ten years at the Charité Hospital, Berlin, and of 3,104 instances of tuberculosis in children there were, according to Biedert, only 16 cases, while in adults primary intestinal tuberculosis occurred in but one instance in 1,000 autopsies at the Munich Pathological Institute. In this country the studies

of Bovaird in New York, and of Hand in Philadelphia, speak strongly in favor of air-borne infection in the large majority of cases in children. There is a special liability of the milk to become contaminated by the dust in uncleanly streets and in dirty houses, and upon this mode of infection von Behring lays great stress, and in infancy, either in this way or from the milk of tuberculous cows, he thinks the majority of persons become infected. Apparently he does not adopt Baumgarten's view of the latency of the germ itself, but of the latency of small foci of disease acquired in childhood, which only develop into active tuberculosis under favorable circumstances. It may be well to quote his own words in this connection, as his views are of importance: "I am well acquainted with the statistical arguments based on the higher returns of infection and mortality from consumption among attendants on the sick residents in houses occupied by people known to be phthisical, and inmates of prisons, which are intended to demonstrate the origin of pulmonary phthisis from the inhalation of particles of dust, or moisture containing tubercle bacilli. But in view of the extensive dissemination of tuberculosis above described among the human race, there is ample justification for the objection that in cases of this kind, where persons succumb to pulmonary phthisis, tuberculous foci pre-exist in their lungs, and that these pulmonary lesions already present developed into active consumption, owing to the adoption by those persons of a mode of life favoring tuberculosis."—"British Medical Journal," Translation, Oct. 17, 1903.

We need a systematic inspection, according to Naegeli's method, of the bodies of children dead of acute diseases, so as to get, if possible, the true incidence of infection in them. Councilman and others have shown how frequently tuberculosis is present in the bodies of young children dead of diphtheria, but the statistics at our disposal certainly do not bear out this view of von Behring, which would lead us to suppose that infection was largely a matter of childhood. Naegeli's figures on this point are interesting, though he only had 88 autopsies on children. Still his results are of value, as the inspections were made with such very special care. Of these 88 children there were only 15 with tuberculous lesions. In 10 of these the tuberculosis ran a fatal course; in 4 there were advanced lesions which did not cause death, and in only one was there a definitely healed lesion.

Sown broadcast as they are in our modern life, it is evident that few people reach maturity without harboring the seeds of tuber-

culosis. That we do not all die of the disease is owing to the resistance of the tissues, in other words, to an unfavorable, *i. e.*, the rocky soil on which the seeds have fallen. The parable of the sower sets forth in an admirable way the story of the disease. Since I used it, in 1892, the illustration has become hackneyed, but in a semi-popular lecture I may be permitted to employ it again. The seeds that fall by the wayside are the bacilli that reach our great highways, the air passages and intestines, in which they are picked up by the phagocytes, representing the birds of the air, or they are trodden under foot by the swarms of contending organisms. The seed that falls on stony places is that which reaches the lymph-nodes of the bronchi and mesentery, and though it springs up and flourishes for a while, there is no depth of earth, and, lacking moisture, it withers away into cretaceous healing. And that which falls among thorns represents the bacilli which effect a lodgment in the lungs, the kidneys or elsewhere, where they thrive and grow and produce extensive changes, but the thorns—the equivalent of the cares of this world and the deceitfulness of riches, in the parable—grow up also, and in the form of delimiting inflammatory processes and of contracting fibrosis, choke the seed, and recovery ultimately takes place. But falling on good ground, the seed springs up, increases and brings forth fruit some thirty, some sixty and some a hundredfold, which may be taken to represent the cases of chronic, subacute and acute tuberculosis. We are beginning to appreciate that the care of the soil is quite as important as the care of the seed. We cannot repeat Trudeau's remarkable environment experiment in our cities, but we learn a practical lesson of the influence of fresh air, open spaces and sunlight upon infected individuals. Much has already been done in this direction, and the reduction of the mortality from tuberculosis which has been going on for the past twenty-five years has been in great part due to improved sanitation. We have only made a beginning, but to know the enemy in this case, to know that his strength lies in the homes of the poor, is more than half the battle.

Let us look at the conditions confronting us in one of the large eastern cities. Like Philadelphia, Baltimore is fortunate in the absence of big tenement houses, but, like it, too, it has the disadvantage of a large number of very narrow streets and alleys. There is no drainage system, the sewerage is collected into cesspools, while the surface water and the water from the kitchens runs off on surface drains. There is a very large foreign popula-

tion and a large number of colored people. While tuberculosis is a very common disease, I do not think the mortality in Baltimore is specially high. In the report of the Board of Health for the year 1901, there were 1,274 deaths from the disease in a total mortality of 10,479, about 12 per cent.

Four years ago two ladies, interested in the disease, gave me a sum of money to use in connection with our work at the Johns Hopkins Hospital. We do not take many cases of tuberculosis into the wards. Last year there were only 53. They come chiefly for the purpose of diagnosis, and we often admit patients from outside the city on purpose to teach them for a period of a week or ten days, just how to regulate their lives. It seemed best to try to do something for our consumptive out-patients, of whom we have an average of about 200 new cases in the year. It seemed to me that a good and useful work could be done by the personal visits of an intelligent woman to the houses of these patients, that she might show them exactly how to carry out the directions of the physician and give them instructions as to the care of the sputum, the preparation of food, and when necessary to report to the Charity Organization as to the need of special diet, or to the Health Board when the surroundings were specially unsanitary. In connection with this an inspection has been made of the condition under which these people live. Of the 726 cases, 545 were whites, and 181 blacks. Among the whites were 53 Russian Jews. There were 492 males, 234 females. The analysis of the reports of Miss Dutcher, Miss Blauvelt and Miss Rosencrantz during the past four years is briefly as follows:

| | *Russian.* | *Colored.* | *White.* |
|---|---|---|---|
| | *Per ct.* | *Per ct.* | *Per ct.* |
| Bad sanitary location | 62 | 53 | 16 |
| Insufficient light and ventilation | 71 | 65 | 39 |
| Overcrowding | 61 | 41 | 32 |
| Personal and household uncleanliness | 70 | 56 | 30 |

The white population in a large majority of the cases was distributed irregularly throughout the city, but a large proportion live in good locations, many even on new streets in the suburbs. A small percentage, about 20, live in a bad neighborhood, where the houses are close together, and hemmed in in narrow alleys and courts. This region lies chiefly to the south and west of the hospital toward the harbor. In about a third of these people the

personal and household cleanliness is fairly good. The colored people make up about a fourth of the cases. They live in much more unfavorable localities, chiefly in narrow, thickly populated and dirty alleys in small two-story houses, usually old, and the windows often limited to the front—houses in which proper lighting and ventilation are impossible. One important feature in the colored population is the desire always to occupy their own houses, so that there is comparatively little overcrowding. The Russian Jews form about one-fourteenth of the total number of patients. They live in a neighborhood that was at one time inhabited by the wealthier classes and the houses have now been converted into tenements. The streets are in many cases wide and clean and sunny. The percentage of overcrowding in the rooms is high. Very often a family of seven or eight is found in two rooms. The contrast in the matter of personal and household cleanliness between the Russians and the other whites is most striking. It is exceptional to find the former in a condition, either in person or house, that could be termed in any way cleanly. A very serious thing is the frequency with which the patients move from one place to another. The 726 patients had during their illness occupied 935 houses. Last year the percentage of removals was still higher. The 183 patients had occupied 379 houses. Another important point brought out was the fact that fully 66 per cent. of the patients visited did not sleep alone.

Amid such sanitary surroundings the patient can scarcely avoid contaminating the house in which he lives, while, perhaps more important still, the environment, combined with insufficient food, etc., lowers the resistance of the other members of the family and renders them more liable to active disease.

How are we to combat these conditions? *First,* by an educational health campaign in the homes. The young women who have been engaged in this work in Baltimore have frequently reported to me the readiness with which their suggestions have been accepted, particularly in regard to the care of the sputum. To be successful such a campaign must be carried out by the Board of Health, and a staff of trained visitors, women preferably, should do the work. To carry this out effectually there should be, *secondly,* in all cities a compulsory notification of cases. The plan has worked most successfully in New York, and it should be everywhere followed. There are no difficulties which cannot be readily surmounted, and there need be no hardships. *Thirdly,* in most cities the powers of the health boards should be greatly en-

larged, so as to deal efficiently with the question of proper disinfection of the houses occupied by tuberculous patients. *Fourthly,* the question of the housing of the poor needs attention, particularly in the matter of proper control of tenements, and the regulation, by law, of the number of persons in each house. *Fifthly,* by placing upon the landlord the responsibility of providing, under the control of the Board of Health, a clean, wholesome house for a new tenant. *Sixthly,* the wholesale condemnation of unsanitary streets and blocks, and the rebuilding by the municipality, as has been done in Glasgow and elsewhere. We cannot make people cleanly or virtuous by act of the legislature; at the same time we cannot leave important sanitary details in the hands of irresponsible persons whose view of life is limited to returns and rentals. The extraordinary reduction in the mortality from consumption in the large cities is due directly to an improvement in environment. That much more remains to be done in the way of betterment the facts I have presented fully show.

## III.

And then we have to face the all-important fact that at present an immense majority of all tuberculous patients have to be treated at home. Probably not 2 per cent. of the cases can take advantage of sanitarium or climatic treatment. What has the new knowledge to say to the 98 per cent. which is debarred from the enjoyment of these two great *adjutores vitæ?* Very much! Read aright, a message of hope to many. Just as we have learned that climate in itself is not the prime essential, but a method of life in any clime, so we have found that even under the most unfavorable surroundings many cases recover in town and country, if rigid system and routine are enforced. But "Hope, that comes to all," as the poet sings, comes not to the large proportion of the unhappy victims in our overgrown and crowded cities. What but feelings of despair can fill the mind in the contemplation of facts such as I have laid before you in the analysis of our inspection in Baltimore? So numerous are the patients that private beneficence shrinks at a task which the city and State authorities have not yet mustered courage to attack, except in one or two places. Hospital care for advanced cases, sanitarium treatment for incipient cases, can only be provided by an enormous expenditure, but we must not be discouraged, and the good work begun in Massachusetts, New York and in this State will grow and prosper. After all, the campaign in which we are engaged is one of educa-

tion; only let us not forget that teaching has not all been on the side of the profession. We have all been at school during the past quarter of a century, and at school we must remain, at once teachers and pupils, if we are to make the knowledge we possess effective. We are not living in Utopia, and in the matter of sanitation the man on the street is a blundering, helpless creature whose lessons are put bodily into him at a heavy cost of life and health. You know this story only too well in Philadelphia. To provide accommodation for all consumptives is impossible, but it is not unreasonable to look forward to the day when every large city will have a sanitarium for the treatment of the early cases, situated not far from its outskirts, with all the equipment for open-air treatment. Let there be some place at least where a poor working man or working woman may have a chance for life. Now, as we doctors know only too well, hundreds are sacrificed in whom the disease could have been arrested. The hospital care of the very sick should be provided for in special wards of the city hospitals. To give the best of care to these unhappy victims is a true charity to them; to place them where they cease to be a danger to the general health is a true charity to others.

In the warfare against tuberculosis the man behind the gun is the general practitioner. The battle cannot be won unless he takes an active, aggressive, accurate part. That he is not always alert must be attributed in part to the carelessness which a routine life readily engenders, and partly to a failure to grasp the situation in individual cases. The two points to be impressed upon him are, first, *that early recognition of the disease can only come from better methods of practice and greater attention to the art of diagnosis.* The insidiousness of the onset, the protean modes of advance, and the masked features of even serious cases should never be forgotten. As Garth so well puts it in his Dispensary (1699):

> "Whilst meagre *Phthisis* gives a silent blow;
> Her *stroaks* are sure; but her advances slow.
> No loud alarms, nor fierce assaults are shown,
> She starves the *fortress* first, then takes the *town.*"

Too often precious time is wasted and the golden opportunity is lost by the failure of the physician to make a thorough examination of the chest. I am every day impressed with the necessity of more rigid, routine examination, even of the "ordinary case." In

illustration of the carelessness which is so readily acquiesced in, let me mention a patient who was brought to me only a few weeks ago, supposed to have a protracted fever after typhoid. Her father a physician, her husband a physician, and it is scarcely credible that neither of them had the faintest idea that the poor soul had advanced consumption, though it had reached a stage in which there was shrinkage of one side of the chest, and the diagnosis could almost be made by inspection alone. The carelessness is a sort of mental inadvertence, to which even the best of us at times seem liable. A very distinguished and careful physician brought his daughter to me a few years ago to have her blood examined, as he felt sure she had a chronic malaria. She had little or no cough, but an afternoon rise of temperature, and it turned out to be the usual story—quite pronounced local disease at her left apex. There had not been a suspicion on the part of her father or of the family.

On the other hand, we must be careful not to diagnose tuberculosis too readily. The physicians of our sanitaria have a good many tales to tell in this matter.

The second point is the *necessity for a more masterful management of the early cases.* Here comes in that personal equation so important in practice, and which has such a vital bearing in the prognosis of the disease. The dead hand of the Arabian still presses sore upon our practice, and precious weeks are too often lost in trusting to a polypharmacy which in some instances would make the heart of Avicenna or Averroes to rejoice. It may seem hard to say so, but my firm conviction is that more tuberculous patients are injured than helped by drugs. We have not yet come to the belief—to the practical belief, at any rate—that the disease is not to be *treated* by them. After so much has been written and spoken, one would suppose that the essential features of the treatment of the disease were generally recognized, but the practical experience of any man who sees a great deal of tuberculosis is directly to the contrary. It is not so much that the drugs do harm *per se,* but that weeks of priceless value are lost in trying to check a cough and quiet a fever in a patient who is allowed to continue his work and is up and about. I cannot agree with a recent writer who says that the tendency at present is rather to make too little than too much of medicinal treatment. Perhaps in advanced cases we are more sparing, but in early stages *I know* that we are still leaning on the Egyptian reed in which our fathers trusted and trusted in vain. Year by year I see only too many in-

stances in which the mental attitude of the physician toward the disease clearly indicates that the idea of an efficient home treatment by fresh air had never been entertained. What I would like to plead for mostly is this home treatment of early cases by modern methods. I am not addressing myself now to city physicians. But I would appeal to the practitioners in the country and in the smaller towns and in the suburbs, where the conditions are so much more favorable. I have been much interested for several years past in a group of cases scattered all over the country, usually in the farmer or mechanic class, in which I have supervised with the physician a home treatment, often with striking success. The remarkable case which I reported in 1900 gave me great encouragement, as the complete arrest of the disease was accomplished under the most primitive surroundings by the persistence and devotion of the patient herself, who richly deserves the good health she enjoys to-day. There have been disappointments; all cases are not suitable, all cases are not curable, and it is not easy to say which ones are likely to do well. The most favorable-looking patient with a small patch at one apex may have a progressive disease and die in the best of surroundings, while a case with high fever, sweats and an extensive lesion may improve rapidly. On November 24th, a fine, stalwart fellow came to see me, in whom I did not recognize the *poitrinaire,* of September 28th, carrying his diagnosis in his face. The sunshine and open air of a Maryland village had been enough; enough, at any rate, to put him on the high road.

Let me mention in a few words the essentials in this home treatment of consumption in the small towns, country places and the suburbs of our large cities. *First,* the confidence of the patient, since confidence breeds hope; *secondly,* a masterful management on the part of the doctor; *thirdly,* persistence—*benefit is usually a matter of months, complete arrest a matter of years, absolute cure a matter of many years; fourthly,* sunshine by day, fresh air night and day; *fifthly,* rest while there is fever; *sixthly,* breadstuffs and milk, meat and eggs.

Let us not forget that it was a country practitioner, George Bodington, of the little town of Sutton Coldfields, in Warwickshire, who, in 1840, revived the open-air treatment of tuberculosis. "To live in and breathe freely the open air, without being deterred by the wind or weather, is one important and essential remedy in arresting its progress—one about which there appears to have generally prevailed a groundless alarm lest the consumptive should

take cold." And he gives a number of cases showing the good effects of the open-air treatment. He seems to have carried it out on the plan which was so strongly advocated by Sydenham, which was a combination of open air and riding or carriage exercise. There are few things more striking in the writings of Sydenham than the insistence with which he states that consumption is curable. It is worth quoting a paragraph which I take from Locke's *Anecdota sydenhamiana,* as it is put in a more striking way than in his general work: "I am sure that if any physician had a remedy for the cure of a phthisis of equal force with this of riding he might easily get what wealth he pleased. In a word, I have put very many upon this exercise in order to the cure of consumptions, and I can truly say I have missed the cure of very few; in so much that I think how fatal soever this disease be above all others, and how common soever (for almost two-thirds that die of chronical diseases die of a phthisis), yet it is this way more certainly cured than most diseases of less moment: Provided always that this traveling be long persisted in according to the age of the patient, and length of the disease. . . . Women or very weak men that cannot ride on horseback may ride in a coach and yet attain the same end, as I have seen by often experience." In reality, this practice of Sydenham never died out, but it was in practice in New England in the early days and throughout the eighteenth century. The late Henry I. Bowditch, who did so much to further the study of tuberculosis in this country, states that he followed it in his own case.

Let me conclude with a quotation from De Quincy, which puts in graphic language the question which so many generations have asked and asked in vain, but which we have been permitted to answer in part at any rate, and to answer in hope: "If you walk through a forest at certain seasons, you will see what is called a *blaze* of white paint upon certain *élite* of the trees marked out by the forester as ripe for the ax. Such a blaze, if the shadowy world could reveal its futurities, would be seen everywhere distributing its secret badges of cognizance among our youthful men and women. Of those that, in the expression of Pericles, constitute the vernal section of our population, what a multitudinous crowd would be seen to wear upon their foreheads the same sad, ghastly blaze, or some equivalent symbol of dedication to an early grave. How appalling in its amount is this annual slaughter among those that should by birthright be specially the children of hope, and levied impartially from every rank of society! Is the

income-tax or the poor-rate, faithful as each is to its regulating time-tables, paid by *any* class with as much punctuality as this premature *florilegium,* this gathering and rendering up of blighted blossoms by *all* classes?" Then comes the startling question—that pierces the breaking hearts of so many thousand afflicted relatives: "Is there no remedy? Is there no palliation of the evil?" It is one of the greatest triumphs of scientific medicine to be able to reply, Yes, the evil may be palliated and is rapidly being lessened, and for many at least, a remedy has been found.—"Medical News," December 12, 1903.

## NAUGHTINESS IN CHILDREN.

From "London Mail":

Dr. Still's theory that evildoing in children is not "naughtiness" but "moral imbecility" has presented an absolutely new problem to the mothers of Great Britain.

It must not, however, be supposed that every phase of infantile peccadillo must be labeled as due to "morbid moral defects." The whose question is purely one of degree. Broadly speaking, the ordinary so-called naughty child is not for the moment, at any rate, worthy of high-class medical consideration.

On the other hand, the abnormally naughty child is by a consensus of scientific opinion to be considered as "morally deficient." Doctors, of course, differ on this point as on all others, but a medical man who is well qualified to speak on the subject—thousands of children coming before him in the course of a year—was distinctly pessimistic about the abnormally naughty child.

In his division children fell into two groups—the normally naughty and the abnormally naughty. Luckily, the abnormally naughty form a very small minority.

He first cleared the ground by saying that children are not born with moral tendencies. The child of three years of age is simply a victim of emotions. It has no morals, but as time goes on accumulated accidents give it experiences which lead it to choose between wrong and right, even upon the lowest possible ground—that right pays and wrong does not.

During the growth of some children, however, it is seen that they are not influenced by considerations of this kind. It may be shown in the most subtle way, or it may be perfectly plain to every one. The fact remains that they are not induced to do

right by punishment. The difference in some cases is so slight in childhood that the doctor was certain that a large number never showed this taint sufficiently to call for any special comment; but when they grew up and restraints were removed they developed into criminals.

One of the great difficulties in dealing with these children was the absence of these special signs, and in view of this the doctor acquiesced in the opinion of Dr. Still that all that could be done was to watch carefully and adopt a system of segregation.

LACK OF SELF-CONTROL.

The lady superintendent of a home for girls stated that such children were to be found in all classes of the community. She noted the case of a little girl who tore up her clothes whenever she could. Her parents were wealthy, and isolated the child from the rest of the family, employing a special governess and nurse for her.

The girls of this kind she had to deal with were generally very strong physically, and quite up to the average mentally. In some cases, in fact, they were of exceptional mental strength.

With the abnormally naughty child punishment only influenced it for a time. The hindrance to its committing the same fault only lasted just so long as the impression of the punishment remained. It was not capable of receiving any cumulative impressions through punishment.

All these faults arose from a lack of self-control. In the abnormally naughty child you could not teach it self-control. In dealing with such children, added the lady superintendent, you could only dominate them by moral and mental strength. She gave an instance of a small but exceptionally strong girl, who, armed with a poker and growling like an animal, held all the teachers of the institution at bay. She had simply to soothe the girl into a state of calm.

Never once did she attempt to get hold of the poker. It would have been fatal to have done so. At last the girl listened to common sense and gave it up. Then she induced her to have a cold bath and to lie down. The girl slept for two hours.

The superintendent dealt with the absolutely inhuman aspect of such children. They seemed a reversion to some early and more animal type. Their faults were in most cases senseless; if they thieved, she said, it was in a "magpie" way.

They all had the vanity of the criminal, and had a tendency to "show off." If they were kept apart from the other girls they

felt it bitterly, and it was, to the usual temporary extent, a punishment. Besides, it was better that they should be removed from contact with other pupils.

She was hopeless as to the education of children of this type. When such girls left her she had to take the utmost precautions with regard to their employers. They were emphatically dangerous.

### IS EDUCATION A DANGER?

A view which has been expressed by a competent authority about the education of these "moral deficients," is that it is simply and solely a means of making them more formidable criminals.

The London School Board has recognized the necessity of the course laid down by Dr. Still as the only means of dealing with the cases, and careful steps are being taken. Some homes are being organized by the board for certain groups of mentally defective children who require custodial treatment. Among these some of the "moral imbeciles" will be included.

At the Sanitary Institute it was agreed at the conclusion of Dr. Still's paper that it would be a good thing to have a Royal Commission to consider what should be done with the nation's naughty children. In the minds of some of the promoters of this step is the idea that means should be devised to separate such children, when of an age to be out of the control of any scholastic authority, from the rest of the world. Such a course is held to be necessary if the growing evil is to be checked.

### MAGISTRATES AND CHILDREN.

Dr. Beach's declaration that magistrates, when dealing with "naughty" children, show themselves to be the most ignorant section of the community in this respect, has given rise to much scandalized comment.

A well-known metropolitan stipendiary, however, generously smiled at the unkind imputation. "We do not, as a rule," he said, "dabble in nursery questions. We sit on the bench to administer the law, and the law holds that no person up to the age of seven can be held guilty of any offense."

On the other hand, the London "Evening News" is deeply concerned as to the possibilities opened up by the exposure of the abnormally naughty child, and recently gave some cases which may shortly be expected to engage the attention of the majesty of the law. Here are some examples:

At the Old Bailey, Alice Smith, three, was charged with being a moral imbecile. Police Constable 6796A stated that he found the prisoner lying on her back on the Embankment screaming, and he warned her that if she did not get up and accompany her nurse he should charge her with causing a crowd to assemble.

The jury having found the prisoner guilty, without leaving the box, the judge ordered her to be detained during His Majesty's pleasure.

At Bow Street, Thomas Tucker, two, was charged with being found in possession of an impaired moral potentiality. The prisoner, it seems, has been in the habit of stealing sugar from the tea-table, a habit which no amount of correction would cure.

The magistrate said that it was very sad, but he had no option in the matter. Prisoner would be sent to a reformatory for twelve years.

---

THE CYNIC'S REVISED WISDOM.

Look before you sleep.
Many are called but few get up.
It's a strong stomach that has no turning.
Saint heart ne'er won fair lady.
A church fair exchange is robbery.
Fools rush in and win—where angels fear to tread.
Consistency, thou art a mule.
Economy is the thief of time.
A bird on a bonnet is worth ten on a plate.
What is home without another.
A lie in time saves nine.
Matri-money is the root of all evil.
A word to the wise is resented.
Where there's a will there's a lawsuit.
He laughs best whose laugh lasts.
Misery loves company, but company does not reciprocate.
One touch of nature makes the whole world squirm.

Some are born widows, some achieve widowhood, while others have widows thrust upon them.—From "The Cynic's Calendar of Revised Wisdom for 1904."

# THEATER FIRES.

The recent awful tragedy in the Iroquois Theater, Chicago, is of a nature to arouse a feeling of distrust in the mind of every thinking man or woman as to modern fireproofing methods. The question is very pertinently suggested as to whether it is possible to so construct, equip and manage a theater that such an occurrence as has just horrified the world would be impossible.

Before answering this latter question some account must be taken of theater fires in the past and of the conditions under which they have originated and spread. The Iroquois Theater disaster offers the first example of a conflagration in a so-called fireproof structure of its class, for it must be remembered that fireproofing as a science cannot be said to be over thirty-five years old. But in this last fire the loss to life and limb was greater than in any preceding disaster of its kind in this country, over a thousand people being killed, maimed and injured, while the actual deaths, at this writing, are said to run up over six hundred. Only in two instances has this death list been exceeded, namely, in the Ring Theater, in Vienna, in 1881, when about nine hundred lives were lost, and the Lehmann Theater, St. Petersburg, in 1836, when the loss was about equal to that in the Iroquois Theater. As a matter of fact, the construction of a theater bears very little relation to the loss of life which results in a conflagration. The danger comes partly from the fire spreading rapidly, more to liability of suffocation from smoke and gases, but most of all to the unreasoning, blind panic which is so apt to seize a crowd when threatened with danger. In nearly every theater fire, after the spectators have either escaped with their lives or been trampled or suffocated to death, the firemen are able to enter the building with relative impunity and proceed systematically to extinguish the flames. Consequently while no theater ought ever to be constructed which is not in every detail of what we choose to term fireproof construction, the real danger is from other sources, and, as one of our daily papers puts it very properly, our theaters must be not merely fireproof but also panic-proof. In the Ring Theater disaster all of the loss of life occurred during a period of about fifteen minutes. In the Iroquois Theater inside of thirty minutes after the fire originated the flames had been extinguished.

As to the causes of theater fires, these are seldom difficult to

ascertain. Although accounts do not fully agree it seems pretty certain that the Iroquois fire started by a border or hanging drapery coming in contact with an electric arc of some sort. In the Ring Theater disaster the fire was caused by the explosion of a lamp which was dropped on the stage. The burning of the Brooklyn Theater, in 1876, when 293 persons were killed, was caused by a border catching fire from border-lights. In nearly every recorded instance of theater fires when the cause is traced back far enough it is found to be personal, human negligence or carelessness, which could very easily have been prevented, and the spread has almost invariably been due to the fact that those who should have stood between the public and danger lost their heads completely. Eternal vigilance on the part of every one is the only price of safety. The installation of the Iroquois Theater stage was the best that could be devised. It is very easy to look back now and see how disaster might have been averted, but with the amazing complexity of management of the modern stage it can easily be understood how the most careful management and most adequate provision will not always be sufficient to guard against the carelessness of indifferent stage-hands.

There are a number of points that ought to be considered in the construction of every theater, and although many of them are called for by building laws, such laws are unfortunately often more honored in the breach than in the observance. A great deal of emphasis is usually accorded to the necessity for a fire-proof curtain. Its value can easily be overestimated. Had the curtain in the Iroquois Theater not stuck when half way down, in a few seconds the whole stage would have been a mass of flame, and probably not one of the five or six hundred stage-hands, chorus girls, and actors would have escaped alive, while it is very doubtful if after the alarm had once been given the dropping of the asbestos curtain would have averted the horrible panic among the spectators. The asbestos curtain ought to be in every theater, and it ought to be worked up and down during each performance, and it should run in iron grooves, so that when down it will entirely close the opening. It should, moreover, be suspended in such a manner that the supports cannot be burned away, and should be hung so that it will descend of its own weight. To a small theatrical company the danger from closing this curtain during a fire on the stage is not excessive, but with such a large company as played in "Mr. Bluebeard," the fire curtain when down might easily be a source of danger rather than safety.

Every theater should be thoroughly equipped throughout the entire stage and the rigging-loft, the dressing-rooms, storerooms, airchambers and scenerooms with automatic sprinklers supplied from a gravity tank. Gravity sprinklers are by no means infallible; they go off when not wanted, and on the whole they may damage more property than they save, but if they are kept in proper working order they will go a long way toward ensuring the prompt extinguishment of an incipient flame, and that means the saving of life, even though the property be ruined with water. Furthermore, every curtain opening should be equipped with a water curtain. This device probably in six cases out of ten will fail to work by the holes in the pipes or the orifices of the fan-tail jets becoming stopped with dirt or rust, but the good it might do in the other four times would make it worth all it cost.

The stage-rigging and scenery should, in every theater, be treated so as to be non-combustible. Taking the average value of human life at five thousand dollars, the Iroquois disaster represents a money liability of three million dollars, which is enough to fireproof all the scenery in the country and leave something over for repairs. The theatrical artists may not like fireproof scenery, neither do they like sprinkler-pipes, but it seems utter folly to carefully fireproof the entire structure of a building, and then fill the upper portion of the stage with thirty to fifty tons of highly inflammable fabrics so hung that fire will communicate from one fold to the other like a flash, and inside of twenty seconds after the beginning of a flame the whole mass will be blazing. One has to witness a fire on a stage in order to appreciate the terrible rapidity with which flames will spread through scenery. The fire darts along the cloths and the burning fabrics fall off in great blazing shreds, which mean sure death to anyone upon whom they fall. And yet all this can be absolutely guarded against by simply impregnating the scenery in one of the many solutions which are made for the purposes of fireproofing. In some cities this is required by law, but so far as is known at present in no city is this law enforced.

It goes without saying that wood should be carefully left out of all stage construction. It need not necessarily be omitted from the scenery itself. It is a fact that wood which is treated with one of the fireproofing compounds, while it will char will not blaze nor spread a fire, and such fireproofing should be insisted upon. Then there should be on each side of the stage at the front and at the back a line of not less than three-inch standpipe, with hose

connections and hose, already on a reel, at the front and back on each of the fly galleries, and during the performance there should be some one man on each side at each lever, whose sole business it is to simply watch for fire and be prepared to put it out. And lest this man, who, in a sense, would hold the lives of so many in his hands, should lose his head and fail at the critical moment, seeking safety for himself in flight, there should be a special fire exit readily at hand for his special benefit. This is done in some of the better theaters. It ought to be the rule in every one.

Varnish ought never to be used in any form about a theater. We have seen a flame start on a face of varnished sheathing and run like a flash over the whole face of the wall, and the varnish in burning throws out an enormous quantity of highly suffocating fumes. There are other compounds which would produce a better finish and which are not so highly inflammable.

The building laws in many of our large cities call for a skylight to be placed in the roof over the stage, this skylight to have an area equal to one-tenth of the stage area, and to be automatically movable, so that in case of fire it can be thrown wide open, allowing free escape for smoke and flames. This is another wise provision, but in practice it is rendered of little value for the reason that the skylights are seldom opened, and under emergencies they are very apt to stick and refuse to move.

But fireproofing the stage and scenery will not guard against panic. The only safety in this respect is to so plan the theater that the public will feel they have every facility for rapid, untrammeled exit. There is not a city in this country in which the laws require that a theater shall be isolated on all sides, but such ought to be absolutely the rule. It is not possible when the building is so hemmed in, as was the Iroquois Theater, to so construct the exits in size and arrangement as to be really safe in time of a sudden panic. Boston is the only city that attempts to guard against this by insisting that there shall be in front of each division of the house a lobby large enough to contain, standing, all the people who would occupy the corresponding division of the house. This is a most excellent provision which is entirely lacking in the Chicago laws. Had there been such lobbies properly placed in front of the Iroquois the death list would undoubtedly have been relatively slight. In estimating the size of these lobbies it has been the custom to assume one and a half square feet as the area to be allotted to each person. This is too small. It ought to be counted at two square feet per person at least.

It is to be hoped that the time will come when our law-makers will appreciate the desirability of absolutely prohibiting spectators from standing in any portion of any of the aisles or passageways of the theater. Such a provision, as far as it relates to aisles, is embodied under the Boston and the New York laws, but it is seldom enforced, and every theater that is built makes admitted provision for "standees." When every seat is filled not another person ought to be allowed in the house. Three of the oldest theaters in the country: the Boston, the Academy of Music in New York, and the Academy of Music in Philadelphia, are arranged so as to absolutely exclude standees unless they remain in the outer corridor and peer through the glass doors. It is also in Europe the general custom to so arrange the theaters, but our American managers appreciate so keenly the money value of stand-up tickets that in all our recent theaters most liberal provision is made for such frequenters.

When it comes to a matter of exits, the Boston Building law is one of the most generous in that it calls for an aggregate of forty inches in width for each one hundred people. Unfortunately, however, there are several ways in which the margin of safety is infringed upon. On estimating the number of people, provision is commonly made for only as many as there are seats, which is often one or two thousand under the actual number of people in the auditorium. Furthermore, in making up the total aggregate of width, it has been the custom to allow exterior iron fire-escapes to count as part thereof. Fire-escapes ought to be entirely in addition to what would be considered ample security for the audience, for the number of people who, panic stricken, could with safety avail themselves of the chance to crawl along a fire-escape on a cold, snowy night, with a raging fire on one side, a badly scared crowd behind them, and a dark, uncertain passageway before them, is very slight. As a matter of fact, so far as known, there is not a theater in this country whose exits aggregate the equivalent of forty inches in width for each one hundred people who are allowed to enter the house.

Again, the matter of stairs. Most building laws prescribe minimum dimensions of seven and one-half inches and ten and one-half inches for the rise and tread respectively of the steps, a maximum width without intermediate hand-rails of five feet, and a maximum number of fifteen risers in any one run. Such stairs are too steep for a crowd. With fifteen steps in a run, the rise and tread should not be more than five and fourteen inches, respec-

tively. And in proportion as the ratio of these dimensions is changed the number of steps in a run ought to vary, until with seven and one-half inch and ten and one-half inch steps the run should not be more than six or eight steps. At the turn of the flight of stairs the landing should extend out at least one foot beyond the line of rail of the upper flight, and every tread in every flight of stairs which is not carpeted should be edged with Mason Tread or something of that nature.

In some theaters attempts have been made to do away entirely with stairs, substituting a long incline or ramp therefor. There is a theater in Los Angeles in which the gallery and balcony are both reached in this manner, and the recently completed Nixon Theater, in Pittsburg, has a double ramp reaching from the ground floor to the balcony, with a slope of about one in twelve. Both of these theaters were designed by Mr. Marshall, the architect of the Iroquois. It would seem as if such a device would obviate a certain amount of danger from panic. Surely no crowd can with safety be compelled to go down stairs in a hurry.

In more recent theater fires the chief source of danger has generally been something connected with the electrical work, and it is a fact beyond question that electric installations, especially on the stage, are often of a character to invite trouble. A modern stage will consume current at the rate of four or five thousand amperes per hour, and too much care cannot be taken of this extremely important feature of the building. In the first place, the supply to the stage-lights should be entirely independent of all the rest of the house, and the current for the auditorium, the lobbies and the dressing-rooms should not even be taken to the stage switchboard, but should be controlled in another part of the house, so that they could in no circumstances be affected by any accident on the stage. It is customary to depend for protection against overloading entirely upon fuses. These are most unreliable safeguards as applied even under the most careful supervision, and as a matter of actual fact circuits on a stage are generally fused so high that fuses would not melt until after a good deal of damage has been done. Besides, in the hurry of making temporary connections, the stage electricians are by no means always particular as to the kind of fuse which is used, and an interesting collection might be made of various sorts of devices which have been found doing duty as fuses, which would include cold chisels, sections of 0000 wire, hair-pins and ten-penny nails. The only efficient device at present available is an automatic circuit breaker. These

should be installed on every circuit of any size, and if they are used intelligently they constitute a very reliable protection. Exposed arcs of every kind should be absolutely prohibited, and every switch should be enclosed for protection in such manner that sparking at the contacts could not possibly communicate fire to anything.

As regards the exits and passages leading from the auditorium to out-of-doors, they should never be left unlighted for a moment, and the electric wires and the outlets should be so protected that nothing but the destruction of the fixtures could cause a total stoppage of the light. When the panic seized the spectators in the gallery of the Iroquois Theater, and they rushed toward the exits, it was to find the lights all out and they themselves in total darkness. There is no evidence at present public to show whether the lights were turned off by some over-excited attendant, or whether connection was broken by the fire on the stage, but it is perfectly possible to install devices which would be quite independent of either possibility. A small storage-battery can be arranged in shunt with the current supplied to at least one outlet in each corridor and stairway, the battery constantly charging while the lamp is in direct operation from the street current, and lighting up by drawing on the battery when the street supply is cut off. This is a device which costs only a few dollars, and has been installed in some theaters. Something of this kind should be required by law everywhere.

The Boston Building law prescribes that no boiler, furnace, engine or heating apparatus, except pipes, shall be located under the auditorium nor under any passage or stairway of any exit of a theater. This provision does not obtain in Chicago nor in many of our cities. As theaters are almost universally now required to be of fireproof construction, the boiler-room can be made perfectly safe almost anywhere, and the only object in keeping it away from under the stage or auditorium is to prevent its being used as a storeroom for rubbish, which is generally the fate of every compartment, large or small, within reach of the stage manager.

It is safe to say that there is not a theater in this country which fully answers all the requirements of safety indicated above. The laws in several of our cities prescribe that scenery shall be fireproof, but it is never done. The scenery is generally brought to the theater with each company that arrives, and is allowed to go up without a protest from any one. There is an immense amount of rubbish necessarily accumulating all the time about a stage, and

each company usually has some special ideas about arrangement of scenes, and more particularly about the electrical work. Consequently, when a system is put in order, it seldom stays so, and it requires the utmost care on the part of the manager, and an amount of electrical knowledge and ingenuity beyond what is possessed by the average stage electrician, to prevent the stage and the electrical fittings getting in such condition that a slight break or short circuit might, without repression, result in serious damage. To say, however, that a theater cannot be made perfectly secure against fire is to deny the facts. We can build our structures and equipment in such manner that there will be absolutely no danger from fire either on account of scenery or even through carelessness. Then if, in addition to that, our laws compelled us to make our exits on a more generous scale, to give ample lobbies in which a crowd can spread itself out and recover from panic, the liability to such fatalities as the Iroquois Theater would be enormously reduced. Nothing can absolutely guard against the danger of panic. We have only to recall the shocking catastrophe associated with the coronation of the Czar and the panic which seized the crowd on the Brooklyn Bridge to appreciate that it is the people themselves whom the spectators have most to fear. But we can surely head off the panic by making a blaze in the theater an impossibility, and a panic-stricken crowd which has plenty of room to spread itself out will speedily recover from its alarm.—C. H. Blackall, in "The American Architect," January 9, 1904.

## UNREST.

Why should we wish or care to know
Why all is changing here below?
Why outward life should ebb and flow?
Or why our thoughts should shift and sway,
And like our dreams should pass away?
We backward turn and lingering yearn
For that which never can return:
For, all our life, our sense of being
Lies in the fulness of our seeing,
Not the fleeting things we borrow,
Or the phantoms of to-morrow,
But the splendor and the play
Of that rich life that's here to-day.

Winchester, Mass., February 10, 1904. —E. A. Brackett

## MEDICAL EXCERPT.

By T. P. CORBALLY, A.M., M.D.

EPITHELIOMA CURED BY RADIOTHERAPY.—MM. Horet and Desfosses presented to the Société Médicale des Hôpitaux a patient, 64 years old, who had an epithelioma of the face during six years ("Le Progrès Médical," Jan. 23, 1904).

When the patient was examined the first time by the authors of the communication he had all the left wing of the nose eaten by the tumor. The sore measured 3.5 c. in height by 2.5 c. in breadth. The examination after bioscopy confirmed the diagnosis as localized epithelioma.

The treatment employed for the patient was radiotherapy. During the first month it absorbed six unities of the instrument of Holzkniecht, 5 rays of the radiochronometer of Benoist; during the second month it absorbed six unities. The result has been the following: At the end of two weeks the falling away of the crusts, the arrest of the hemorrhages; at the end of the first month the pain disappeared, and at the end of the second month cicatrization was complete.

ACTION OF ROENTGEN RAYS ON ANIMAL TISSUES.—MM. R. Lèpine and Boulud have, at the Acadèmie des Sciences, found that fragments of the pancreas of a dog exposed to the Roentgen rays manifested a power of reduction much stronger than similar pieces left shaded from these rays. The difference exceeded in one case 25 per cent: the average in five tests was 12 per cent. Exposed to the rays during less than an hour the pulp of the dog's liver holds almost always less glycogen and more sugar than is found in the pulp, and the sum of the glycogen and the sugar is also less. The first effect of the X-rays is to favor the glycogenic and the hypatic glycolyses. But when the exposure has been prolonged beyond an hour the conditions are reversed and the glycogenic and the hypatic glycolyses are diminished. The conditions hold the same for the blood, in which case the glycogen and the glycose are at first favored by the Roentgen rays, while the radiologic action, more or less prolonged, diminishes, and may, perhaps, arrest both.

HELENIN IN EMPHYSEMA.—M. Marey ("Le Progrès Médical," March 5, 1904), describing the treatment of emphysema by helenin, says: Under the influence of this agent the entrance of air into the pulmonary vesicles ceases to be obstructed, and respiration is performed freely; a result that Dr. de Korab has determined often, not only by percussion and auscultation, but also by means of polygraph, an instrument for registering, invented by M. le Professeur Marey, which Professeur Constantin Paul placed at his service at the Lariboisière. The oppression ceases and the breathing becomes, as he explains it, like the traveler ascending the hills in upper Austria. Thus he expresses the freedom of breathing as the result of the beneficent action of helenin in emphysema.

UNDER THE HEAD OF PRACTICAL MEDICINE, "Le Progrès Médical" has the following on:

HELENIN AND ITS THERAPEUTIC APPLICATIONS.

Helenin, a solid body, crystallized in quadrangular, colorless prisms, insoluble in warm alcohol, ether, the essences, kereosolene, gives very remarkable therapeutic results which have been well described by Dr. de Korab in divers communications, notably to the Société de Biologie and to the Académie des Sciences. It calms the cough, lessens the expectoration, facilitates the respiration, is possessed of a real power as a bactericide. It possesses, besides, a preventive and a curative action in hemoptysis; it excites the appetite, aids digestion. It is, in fine, the reliable remedy in chronic bronchitis and in pulmonary tuberculosis. It is prescribed under the form of globules d'helenine des Dr. de Korab à la de 3 à 6 par jour.

THE MEASURE OF THE PHYSIOLOGICAL ACTIVITY OF THE KIDNEYS.—M. le Prof. Gréhant presented a communication to the Société Française d'Hygiène recently, giving the results of his studies on the variations of urea in the blood and in the urine. He commenced these studies years ago, for they were the subject of his thesis for the degree of sciences in 1870, and have led him to conclusions of great importance.

He uses in his experiments an apparatus designed by himself, of which he gave a description. He uses the action of nitrous vapors on the urea, and employs as a reactive a solution of 0.8 gr. of metallic mercury in an excess of nitric acid.

The results obtained are rigorously accurate and the reaction

is produced only for the urea, as is shown by the respective quantities of nitrous and carbonic acids produced.

With this exact method of dosing the urea it is possible to measure the physiological activity of the kidneys by establishing the relation between the quantity of urea contained in the blood and that contained in the urine.

The normal relation for the dog is 1.124 c., showing with what activity the elimination of urine is made by the kidney.

M. Gréhant was unable to determine this relation in man because of the difficulty of obtaining the blood in a normal state in a healthy person, but he found that it varies considerably according to the condition of the kidneys. This was the case in an example furnished to him by M. Widal. After the death of a man caused by an accident it descended to 1.10 c., the respective quantities of urea being: for the blood, 0.155; for the urine, 1.55. In this case the urea was in proportion much higher in the blood than in the normal condition.

M. Lematte asked if the reaction is disturbed by other nitrogenous compounds in the urine.

M. Gréhant replied in the negative. The equality of the volumes of carbonic and nitrogen furnished by the reactive showed clearly that we had to deal with the products of the decomposition exclusively.

M. Foveau de Courmelles asked if M. Gréhant had studied the urine of vegetarians.

M. Gréhant said the urine of herbivorous animals, as the rabbit, for example, contains much less urea than carnivorous animals. As for vegetarians, he had not had the opportunity to study their urine.

M. Ed. Joltrain feared that the ureic report viewed by M. Gréhant was not sufficient to give a complete picture of the renal activity. There were morbid states in which the kidneys certainly injured, as in the case of epithelial nephritis, allowed the urea normally, while retained in the economy almost absolutely.

M. Gréhant replied that his studies had thus far led him exclusively to the relations of urea; his procedure, very exact in dosage, allowed him to obtain results very precise.

M. le Dr. Bremond asked if in these conditions M. Gréhant would be disposed to modify the title of his communication, by putting "Measure of One of the Elements of Activity," etc.

M. le Prof. Gréhant accepted this modification of form.

The president thanked M. le Prof. Gréhant for his interesting communication, and all the members present expressed their agreement by loud applause.

CARBONIC ACID TREATMENT OF TUBERCULOSIS.—In bringing forward his carbonic acid treatment of tuberculosis, Hugo Weber ("Zeit. f. Tuberc. u. Heilstättenwesen," Vol. LV, No. 6, and "British Medical Journal," Nov. 7, 1903) says that he influences the disposition and thus indirectly destroys the bacilli. The sanatorium treatment aims in the same direction. If one speaks of improving the nutrition and the general bodily strength, or of an increased carbonic acid production, one speaks of the same thing. He reports 60 per cent. cures, and states that he is careful to take the term "cure" in its strictest sense, and is prepared to demonstrate his cases. The principle is the antagonism between $CO_2$ and phthisis.

Turning to the method of $CO_2$ production, Weber finds that the best is the exhibition of levulose, which can even be oxidized by diabetics. He found that it is not rare to obtain in a week an increase in weight of 300 or 400 grams by giving levulose to weakly children. He describes several cases of tuberculosis in which levulose acted almost magically, especially one of a child of 8 years to whom he gave four teaspoonfuls of levulose a day, and succeeded in arresting and curing a seemingly hopeless case. One can almost effect a cure with levulose alone in adults, but in some cases, if no improvement takes place, he injects perfectly pure liquid paraffin, subcutaneously, in doses of 10 ccm. twice a day. Sometimes it is necessary to give as many as 200 injections. They must be made beneath subcutaneous adipose layer and not merely beneath the skin. He hopes soon to be able to report on 50 further cases which will give the same percentage of cures as his first 55 cases did.

NEW ANÆSTHETIC.—Hungarian dentists and chemists claim to have discovered a valuable local anæsthetic, an alkaloid, "nervocidine," the hydrochloride of which is stated to have properties similar to cocaine, but to produce a much more lasting anæsthesia. The base is obtained from an Indian plant, "gasu basu," the properties of the leaves of which were first discovered by Dalma, who successfully employed them in painful pulpitis with such good results that he reported that the drug might displace arsenic for

dental purposes. B. von Fenyvessy has investigated the properties of the alkaloidal hydrochloride, as prepared by Dalma, which is yellow, amorphous, hygroscopic powder, readily soluble in water. It produces marked anæsthesia of the cornea in a 0.1 or 0.2 per cent. solution, which is very persistent, and a 0.1 per cent. solution brushed on the mucous membrane of the cheek also gives marked anæsthesia. Stronger solutions, exceeding 0.5 per cent., produce irritation of the cornea, and a 2 per cent. solution causes ulcerative keratitis in dogs and rabbits, which lasts ten days, during which period the anæsthesia also lasts. It does not appear to produce anæsthesia by subcutaneous injection. Its general effect is that of a paralyzing poison. Although its anæsthetic effect is much more prolonged than that of cocaine, the length of time necessary before this effect supervenes, the irritation caused by the drug, and the toxic symptoms it produces do not point to the probability of its being of general service, except perhaps in dental practice.—From United States Consul-General Hughes, Coburg, Germany, Sept. 21, 1903.

PURIFICATION OF MILK BY OZONIZATION.—An apparatus in use in Germany for the purification of milk by ozonization is so constructed that the milk contained in a vessel flows thence in a thin stream into another vessel, placed below. The wires and carbon points of a strong electric battery are so arranged that the light arc passes through the stream or near it. The ozone which is thereby engendered from the oxygen of the air is said to be sufficient to kill all micro-organisms contained in the milk.—Richard Guenther, Consul-General, Frankfort, Germany, October 14, 1903.

THE CURABILITY OF TUBERCULOSIS.—When Dr. Victor C. Vaughan, Dean of the Medical Department of the University of Michigan, was speaking before the members of the Shiawassee County Medical Society, recently, he startled them by remarking that consumption is the most easily curable of any of the so-called serious diseases. He took the view that only the hopeless cases come under the care of a physician, and that when his advice is sought the patient is already so debilitated as to be unable to withstand the assaults made on the system by the disease. His statements provoked a warm discussion, but Dr. Vaughan stuck to his text.—"Detroit Medical Journal."

# EDITOR'S TABLE.

SANITARIAN, APRIL, 1904.

**All Communications, business and otherwise, all exchanges and all publications for review should be addressed to the Editor, Dr. A. N. Bell, 337 Clinton Street, Brooklyn, N. Y.**

## HEALTH INSPECTORS.

An excellent bill is before the Legislature of New York, at the time of this writing, for the grading and increase of pay of inspectors on the staff of the Board of Health of New York City, which merits the support of all public-spirited citizens. It amends the charter of New York by the addition of a section providing that on and after the first day of January, 1905, all Health Department Inspectors who have been for fifteen years in that work shall be classified in the first grade; those of ten and less than fifteen years' service in the second grade; those of from five to ten years' service in the third grade, and all of less than five years' service, including all who may hereafter be appointed, in the fourth grade. Continuous and faithful service will entitle an inspector to be advanced from a lower grade to a higher one as he passes the five, ten and fifteen year periods respectively. The pay of the several grades is fixed as follows: Fourth grade, $1,200 per annum; third grade, $1,500; second grade, $1,800; first grade, $2,100. These salaries are subject to such deductions for sickness, absence on vacation, fines and forfeitures as the Board of Health shall prescribe by rules applicable to all grades alike.

The work of the Health Department is a service of experts. It calls for special knowledge, and in no branch of the public work is experience more valuable. It is not to be expected that any one qualified to pass the civil service examination and undertake the duties of an inspectorship can be had for less than $1,200 a year. He should be a physician or an engineer, and to secure promotion he must give up all opportunity for another career. If after five years he is not worth $1,500 he does not belong in the service; and if after fifteen years, by which time the average inspector will have reached or passed forty, he cannot be sure of a salary of $2,100 at least, he has absolutely no incentive to make the work of the department more than a temporary convenience, to be aban-

doned as soon as any other opportunity is offered. Above all things, the faithful inspector who attends to his duties and not to his "pull" must be protected against the injustice of remaining stationary in his position and salary while new men with more potent influence are appointed at higher salaries and put over him.

The efficiency of the public sanitary administration depends upon the judgment and experience of our health inspectors. If they are inefficient or corrupt the Board of Health is powerless. The salary demands of the inspectors are extremely moderate, and the principle for which they contend in urging the enactment of the bill referred to is too sound to permit discussion.

### THE SPITTING NUISANCE.

Health Commissioner Darlington has caused public announcement to be made that no further leniency is to be shown toward violators of the provision of the Sanitary Code that makes spitting in public a misdemeanor. Officers of the Health Squad have been ordered to make summary arrests in all cases. The abominable habit of voiding the nasal secretions by blowing the nose on the sidewalk without the use of a handkerchief is rapidly growing as must be evident to any one with habits of observation. Whether or not that shares with spitting in the prohibition we do not know, but if not, it should be specifically included, for a more disgusting practice does not exist.

### ANOTHER THEATER ORDINANCE—NEW REGULATIONS FOR SAFETY.

Alderman Harburger, the Chairman of the Aldermanic Committee on Buildings, at a recent meeting of the Board presented a report from his committee favoring an ordinance to amend the building code in regard to theater construction.

The amendments ordain that the front entrance shall be not less than 25 feet in width; there shall be an open court of not less than 10 feet in width in the rear in houses of less than 1,800 capacity, and not less than 14 feet where the capacity is greater; the staircase from the upper gallery shall be not less than 4 feet wide in the clear; the aggregate capacity of the foyers, lobbies, corridors, passages and rooms for the use of the audience, not including aisle space between seats, shall be sufficient to contain the entire number to be accommodated on said floors or gallery. in the ratio of 150 superficial feet of floor room for every 100 per-

sons; on the first or main floor where the seating capacity is 500 or more there shall be at least 16 feet clear back of the last row of seats.

The report was referred for a week under the rule, as was another report from the same committee fixing 75 feet as the height beyond which buildings may not be erected unless absolutely fireproof.

### TO FIGHT TUBERCULOSIS.

Under the auspices of the United Garment Workers of America a conference on tuberculosis was held on the 13th ultimo, at the Educational Alliance, on East Broadway. There was a large attendance. Henry White, Secretary of the United Garment Workers, presided. The speeches, in Yiddish and German, were delivered by Dr. A. Jacobi, Dr. David Blaustein, Superintendent of the Educational Alliance, and Joseph Barondess.

Paul Kennaday, Secretary of the Committee on Conventions on Tuberculosis of the Charity Organization Society, explained the object of the conference, saying:

"We are not assembled to-night to fight contractors, but to fight the greatest enemy of mankind. It is a disease which kills thousands every year, and most of its victims in this city are people of the East Side. It is no more than a germ, a tiny bit of life that can only be seen through a powerful microscope. You could bring thousands of them together, and they could not be seen by the naked eye, and they are the more dangerous because they cannot be seen.

"This enemy can be successfully fought by preserving caution. We can defy this germ by keeping ourselves, our living rooms, and our workshops clean. It thrives amid dirt, and by removing uncleanliness we can emancipate ourselves from the disease."

### TUBERCULOSIS SEASIDE PLAN.

Tuberculosis is to be attacked in a new quarter by the New York Association for Improving the Condition of the Poor, 105 East 22d street, which has appropriated $15,000 for the maintenance at the seaside of children less than 15 years old, who suffer from non-pulmonary forms of the disease. This will be the first seaside hospital exclusively for tuberculous children in America, although in France such cases are, as a rule, treated at the seaside, it being generally held by experts that the ocean air is the best for such patients whose lungs are unaffected.

There are said to be nearly 4,000 children in the New York tenements suffering from scrofula, tuberculous joints and lymph lobes. Several hospital beds have been provided for them, and the New York Orthopædic Hospital and the Society for the Ruptured and Crippled give special treatment, but the new hospital appears to be a much-needed institution in the same field.

The Association makes the experiment on the strength of reports to its Board of Managers, by John Seely Ward, Jr., who has studied the subject abroad. Herbert Townsend, President of the State Hospital for the Treatment of Incipient Tuberculosis, will be chairman of the new hospital, which is to be maintained with funds contributed to the fresh-air work, and not from those given for general relief purposes.

THE NEW MOUNT SINAI HOSPITAL A MODEL OF SANITARY SCIENCE.

The new Mount Sinai Hospital was thrown open for inspection, March 11th. The buildings, with the air-space courts, occupy the block extending from Madison to Fifth avenue, and from 100th to 101st street, ten buildings in all, connected by corridors on the ground floor, with the exception of the isolation house, designed for the accommodation of persons suffering from contagious diseases. Millions of dollars in donations from the poorest to the richest of the Jewish population of New York are crystallized in the marbles and enameled tiles of the big structure.

Except in the monumental, or structural, portions of the buildings, there is an utter absence of sharp corners, or angles, thus minimizing dust accumulation, and making cleansing easy. Another evidence of the care for cleanliness is in the number of porcelain bath-tubs, these being ninety-six. In addition there are portable baths for each of the many wards. The construction of the buildings that will comfortably house 456 patients has been entirely designed with the idea of light, ventilation, disinfection and isolation.

The roofs of the medical, surgical, private hospital, the children's and isolation houses have been provided with glass inclosures for convalescent patients. These may be opened in fair, warm weather.

Perhaps the most interesting is the administration building. In the basement are the visitors' waiting-room, dining-rooms, pantries for the resident, lay and medical staffs, and storerooms. On the first floor are the reception and examining-rooms, together with quarters for the various resident officials. On the second

floor are the rooms, magnificent in quartered oak, of the Board of Directors, the committee, and the ladies' auxiliary. The latter has an ante-room filled with every sort of linen, cotton and woolen goods, to be sewn into garments for the patients.

On the third floor is a synagogue, with a seating capacity of two hundred.

The fifth floor is almost exclusively devoted to operating rooms, the central one being dedicated by Benjamin Stern to the memory of his brother, Bernard Stern. It is built entirely of Italian marble, with the exception of its large window panes and floor of vitreous tile. There are two tiers of seats, reached by galleries from the floor above. On either side of the operating-room, with its ceiling seventeen feet above the floor and forming a marble dome, are rooms fitted with blanket warmers and dust-proof instrument caskets. In addition there is a room for sterilization. Everything known to modern medical science is included in the equipment. The same is true of the four additional and smaller operating-rooms on this floor. There is a photographic darkroom and an X-ray room, with cabinets for filing radiographs.

The Medical Building, to the east of the Administration Building, has in its basement a complete modern hydrotherapeutic department. There are also emergency wards for the temporary care of accident cases. Here are the 550 lockers where the disinfected clothing of patients is kept until the discharge of patients.

Two rooms containing two beds each have been dedicated by Max Nathan and E. Asiel, respectively; the former is for use of alumnæ of the Nurses' Training School; the latter, intended for general medical purposes, was dedicated in memory of Lina Asiel.

The pantries are reached directly by the freight elevator, upon which the food is brought up from the kitchen in electrically warmed trucks. Each pantry is fitted out as a small kitchen, with gas-range, large copper sink, porcelain-lined refrigerator (fed with brine from the central refrigerating plant), a steam-heated plate warmer, an outlet for carbonated water (a machine for the manufacture of which is located in each building), and closets for dishes and other supplies. There are also coffee grinding and icecream-making mechanical plants.

In the Surgical Building there is a ward of twelve beds, endowed by Miss Rosie Bernheimer, and an eye and ear department of nineteen beds. On the third floor are the Joel Goldberg and the Isaac Blumenthal wards.

The private pavilion dedicated by the members of the Guggen-

heim family to the memory of Barbara Guggenheim fronts on Fifth avenue. The five floors are divided into single rooms and suites of rooms with bedroom, bathroom, and a connecting parlor. There are accommodations for fifty-three private patients. On the fifth floor there is an isolated suite of rooms for operating purposes.

The Children's Pavilion, dedicated to the memory of his son Lewis, by Henry L. Einstein, has on its four upper floors wards of fourteen beds each—bright, cheery rooms—that are fully furnished to the smallest details, such as little tables and chairs for the patients who can be taken from their beds for play.

The Pathological Department, through the endowment of Adolph Lewisohn, is a completely equipped building. The furniture is of quartered oak. The Nurses' Building, fronting on Madison avenue, affords accommodations for 150 student nurses. On the sixth floor there are four rooms isolated as an infirmary and kitchen for sick nurses.

The Dispensary is fitted up with various departments for the treatment of ambulance cases. There are to be two ambulances.

## MORTALITY AND MORBIDITY REPORTS AND REVIEWS.

### OBITUARY.

Dr. Moreau Morris died, March 17, at his residence, on East 73d street. He was born at Stillwater, June 19, 1825, and was graduated in 1848 from the College of Physicians and Surgeons. In 1866 Dr. Morris was appointed Health Commissioner, and from 1870 to 1872 served as Superintendent of the New York City Health Department and State Cattle Commissioner. In 1871 he became Surgeon of the Seventh Regiment, N. G. S. N. Y., and served until 1884. Immediately following his retirement from the National Guard he was appointed Tenement-House Commissioner. On the conclusion of that service, a few years later, he became associated with and was medical director of the American Popular Life Insurance Company. Soon after the failure of the company, in 1879, he again took office in the city health service, and continued in it up to the time of his death, being at that time special medical inspector of all institutions having the care of children.

Dr. Morris' contributions to literature were chiefly on sanitary subjects, particularly on house and soil drainage, and for the most part to the early volumes of THE SANITARIAN. He was married in April, 1848, to Lydia C. Thayer, who died about a year ago, and has left two children.

Dr. Morris was a member of the Seventh Regiment Veteran Association, of the American Public Health Association, of the Alumni of the College of Physicians and Surgeons, and of the Academy of Medicine.

STATE OF NEW YORK.—Monthly Bulletin, Department of Health, for January, 1904, 7,735,000: Total number of deaths, 12.238; annual death rate, 18.7; deaths under 1 year, 1,750; deaths 1 to 5 years, 1,139; deaths at 70 years and over, 2,447; deaths from cerebrospinal meningitis, 43; typhoid fever, 129; malarial diseases, 9; smallpox, 3; scarlet fever, 161; measles, 95; ervsipelas, 36; whooping-cough, 22; croup and diphtheria, 318; diarrheal diseases, 193; consumption, 1,187; pneumonia, 1,510; acute respiratory diseases other than pneumonia, 1,097; puerperal diseases, 106; diseases of the digestive system (not acute diarrhea), 644; diseases of the urinary system, 991; diseases of the circulatory system, 1,334; diseases of the nervous system, 1,319; cancer, 459; accidents and violence, 540; old age, 463; general diseases not epidemic (except consumption and cancer), 470; unclassified, 1,164.

A few changes in the classification have been made to correspond with the international classification.

*Diarrheal* diseases will hereafter be limited to a record only of those occurring under five years of age, and of this reporters are requested to make note. This change is made on advice of those interested in the subject of pediatrics; it is not likely to materially change this record of mortality from that heretofore made, and will make exact what shall come under this head.

Under the term *general diseases* the international classification includes (A) epidemic diseases, and (B) other general diseases. Heretofore no attempt has been made to make a record separately of the latter. They are now taken out of the unclassified group and made a special record of, *i. e.*, all of them not already specially recorded. Consumption (pulmonary) is one of these, and, as heretofore, will include tuberculosis of the lungs and larynx; cancer, likewise, of whatever part, will remain as a record. With these exceptions, the records of general disease now made will in-

clude death from diseases specified in the census classification; tuberculosis, other than pulmonary; Pott's disease, cold abscess, white swelling, scrofula; septicæmia, glanders, rabies, trichinosis; syphilis, rheumatism and gout, diabetes, scurvy; exophthalmic goitre, Addison's disease, anæmia and chlorosis; alcoholism, acute and chronic; chronic poisoning from whatever cause and other general diseases, all as noted on the classification list. Most of this has heretofore gone into the unclassified group, beside which it is now placed for ready comparability with past records.

*Pneumonia* will be taken out of the group of acute respiratory diseases and given a separate record. Its growing importance in sanitary affairs makes this desirable. It is to be understood that this term includes only acute lobar croupous pneumonia, and that it does not include catarrhal or broncho-pneumonia. While many prefixes to this name appear on our death returns, it is pretty safe to say that physicians generally understand the distinction as to the infectious disease we desire to specially record.

New York City, 3,838,024.—Total number of deaths, January, 6,871—annual death rate, 21.0: Borough of Manhattan, 1,940,-121; deaths, 3,858—death rate, 22.7. Borough of the Bronx, 294,939; deaths, 491—19.6. Borough of Brooklyn, 1,334,952; deaths, 2,138—18.9. Borough of Queens, 193,494; deaths, 259 —15.7. Borough of Richmond, 74,518; deaths, 125—20.0.

### *Vital Statistics for* 1903.

A complete statistical report of deaths, marriages and births in Greater New York during the year 1903 has just been issued by Commissioner Darlington of the Board of Health. The report shows that all told there were 67,864 deaths from various causes during the year ending December 31, 1903. It also shows that during the same period there were 94,755 children born. There were 31,174 marriages recorded during the year. The average death rate in all the boroughs was 18.18.

Perhaps the most interesting feature of the report is contained in the column devoted to smallpox. It shows that during the entire year there were but 43 cases reported, from which but five deaths resulted. Twenty-four of the cases were reported from Manhattan and 15 from Brooklyn. These figures go a long way to demonstrate the excellent results that have been attained by proper vaccinations.

The report shows that 9,714 deaths occurred during the year from pneumonia, 3,313 of which were from broncho-pneumonia.

There were 5,831 deaths from pneumonia in Manhattan, as against 2,910 in Brooklyn. From various forms of tuberculosis 9,403 deaths resulted in the greater city, of which 8,019 were from consumption. Four thousand seven hundred and twenty-one tuberculosis patients died in Manhattan, against 2,801 in Brooklyn. Typhoid fever carried off 653 victims throughout the city of the 3,671 cases reported. Of diphtheria and croup, there were reported altogether 18,317 cases. Of these, 2,190 died. Nephritis and Bright's disease claimed 5,636 victims during the year, 2,440 of which were in Manhattan, and 2,123 in Brooklyn.

There were 4,068 violent deaths reported, of which 805 died by their own hands. In Manhattan 462 despondent men and women ended their earthly struggles in various ways, mostly by carbolic acid, while in Brooklyn 234 persons found life not worth the struggle.

Of the grand total of deaths, 22,044 were children 5 years old or under. There died in Manhattan 12,529 children under 5, and in Brooklyn, 7,068. A sliding scale of deaths according to ages, ranging in 5 year groups, running from 5 to 85, shows that the greatest number of deaths reported were from persons between the ages of 30 and 35.

CALIFORNIA.—San Francisco's New Board of Health.—On January 9, 1904 ("Occidental Medical Times" for February), "the following gentlemen, being duly appointed by Mayor Schmitz, were enrolled with the power to manage the most important branch of the local government: James W. Ward, homeopathist; J. Coplin Stinson, regular; J. F. Poheim, regular; J. V. Hughes, regular; William A. Harvey, eclectic. On entrance to the room, each member of this board was handed a resolution declaring certain positions void, and, under another name, they were immediately filled. Two-thirds of the employees were removed at one blow. An upheaval was expected, but its unwarrantableness and rapidity were startling. . . . It was claimed, by such wholesale removal of the old appointees, the expense of the office could be reduced twenty thousand dollars per year. The truth, however, shows that, with the appointments made so far, the absolute reduction was about four thousand dollars. . . . A comparison then of the salaries of the civil service men discharged and those employed to take their places showed an apparent reduction of twenty thousand dollars. But in order to supply the department with sufficient force, the small number of non-qualified em-

ployees of the old board had to be increased to the tune of eighteen thousand dollars per year, which almost wiped out their claim for a reduction of even four thousand dollars, which will surely be done when the service is raised to its necessary number. . . . Mr. Schmitz has for two years violated law, and every form of decency, to negative the work of the retiring board; he has opposed every effort for improvement, advance, or the truth; he has abused and condemned these men on all occasions, and has appointed successors to them, between whom and the members of the old board a comparison would be decidedly insulting. . . . The Board of Supervisors has advised their removal; the profession should stand up to a man and demand it. The blow given the profession by these acts is by no means so embarrassing as that administered the civil service; men standing high, lawfully and efficiently, in these ranks, were removed without a word or trial."

*Plague.*—Cases reported in February, 6; March 1st, 2.

Los Angeles, 160,000.—Health report for February: Deaths, 289—32 under 5 years; death rate, 21.67. From specific infectious diseases, 92; tuberculosis, 67—"15 had lived here less than three months, 10 between three and six months, 4 between six and twelve months, 14 between one and five years, 5 between five and ten years, 12 over ten years, unknown 4, life 3."

COLORADO.—Denver, 175,000. Report for December: Deaths, 260; premature and still births, 10; 51 under 5 years; death rate, per annum, 17.82. Deaths from phthisis, 52—2 contracted elsewhere; typhoid fever, 6 cases, 5 deaths; smallpox, 12 cases; chickenpox, 3 cases; diphtheria, 45 cases, 2 deaths; scarlet fever, 56 cases, 5 deaths; measles, 48 cases; erysipelas, 10 cases, 2 deaths; deaths from heart diseases, 11; pneumonia, 41; broncho-pneumonia, 2; nephritis, 9; cancer, 9.

CONNECTICUT.—Bulletin for January: Deaths, 1,428—82 more than in December, and 8 more than in January of last year, and 35 more than the average number of deaths in January for the five years preceding. The death rate was 17.8 for the large towns; for the small towns, 19.6; for the whole State, 18.3. Deaths reported from infectious diseases, including diarrhea, 308—21.5 per cent. of the total mortality.

Cases of infectious diseases reported: Measles, 1,736 cases in 69 towns; scarlet fever, 180 in 43 towns; diphtheria and croup,

138 in 33 towns; whooping-cough, 65 in 10 towns; typhoid fever, 36 in 18 towns; consumption, 37 in 13 towns.

DISTRICT OF COLUMBIA, 300,902—91,603 colored. Report for the week ended on Saturday, March 5, 1904, numbered 160, which is but 1 more than occurred during the previous week and 15 more than occurred in the corresponding period of last year. Of the recent deaths 101 were white and 59 were colored. These represent a death rate of 24.8 per 1,000 of the white inhabitants, 33.5 of the colored, and a death rate for the entire population of 27.5. These rates for the corresponding period of 1903 were 21.8, 32.6 and 25.3, respectively. The prevailing diseases responsible for deaths during last week were: Pneumonia, 28; consumption, 21; heart diseases, 14; diseases of the kidneys, 10; apoplexy, 9; bronchitis, 6, and malignant growths, 6.

There was an increase in the number of cases of typhoid fever, viz., from 31 to 39, there being 10 new cases reported, and but 2 discharges.

Of scarlet fever there was a decrease during the week of 5 in the number of cases; 11 cases developed and 16 were discharged, which leaves 60 cases in all, quarantined in 37 different premises.

The cases of diphtheria were increased by 5. Six new cases were reported, with but 1 discharge, leaving a total number under observation of 18, quarantined in 8 premises.

ILLINOIS.—Chicago. Statement of mortality for the month of February, 1904, compared with the preceding month and with the corresponding month of 1903. Death rates computed on estimated mid-year populations of 1,950,000 for 1904, and of 1,820,000 for 1903:

| | *Feb.*, 1904. | *Jan.*, 1904. | *Feb.*, 1903. |
|---|---|---|---|
| Total deaths, all causes..... | 2,705 | 2,361 | 2,570 |
| Annual death rate per 1,000.. | 17.92 | 14.24 | 18.30 |
| By ages: | | | |
| Under 1 year..... | 499 | 439 | 451 |
| Between 1 and 5 years..... | 215 | 180 | 291 |
| Over 60 years..... | 618 | 533 | 579 |
| Important causes of death: | | | |
| Acute intestinal diseases..... | 91 | 83 | 97 |
| Apoplexy ..... | 63 | 64 | 52 |

| | | | |
|---|---|---|---|
| Bright's disease | 165 | 156 | 150 |
| Bronchitis | 141 | 123 | 138 |
| Consumption | 278 | 248 | 242 |
| Cancer | 100 | 85 | 85 |
| Convulsions | 73 | 59 | 70 |
| Diphtheria | 38 | 40 | 50 |
| Heart diseases | 195 | 205 | 191 |
| Influenza | 31 | 22 | 38 |
| Measles | 0 | 1 | 21 |
| Nervous diseases | 104 | 95 | 108 |
| Pneumonia | 686 | 504 | 580 |
| Scarlet fever | 26 | 15 | 33 |
| Smallpox | 0 | 1 | 11 |
| Suicide | 32 | 31 | 41 |
| Typhoid fever | 33 | 30 | 54 |
| Violence (other than suicide) | 116 | 110 | 89 |
| Whooping-cough | 0 | 1 | 35 |

Report of the State Board of Health, 1903: Medical Education and Official Register of Legally Qualified Physicians. The laws governing this board and the regulations in virtue of those laws, summarized in this report, attest the justness of accorded leadership to this board in the promotion of medical education and for efficiency in maintaining the highest standard of State medicine in the United States. It comprehends the requirements for medical practice in the United States, medical practice acts of the several States, schedule of reputable medical colleges, decisions of Illinois courts on criminal and questionable practices, advertisers, vendors, etc.; quarantines, liabilities of municipalities for needful restrictions and responsibilities; in short, the volume is replete with practical knowledge on State medicine fortified by law.

INDIANA.—The January Bulletin of the State Board of Health: 3,177 deaths—14.8 per 1,000. In the corresponding month last year there were 2,910 deaths; rate, 13.2. By certain ages the deaths were: Under 1 year, 493, or 16.4 per cent. of the total number; 1 to 5 years, 226; 65 years and over, 930, or 30.9 per cent. of the total. By certain causes: Pulmonary tuberculosis, 361; other forms of tuberculosis, 37; typhoid, 38; diphtheria, 45; scarlet fever, 25; measles, 38; whooping-cough, 7; pneumonia, 540;

diarrheal diseases, 23; cerebrospinal meningitis, 41; influenza, 50; puerperal fever, 15; cancer, 103; violence, 132; smallpox, 8.

*City and Country.*—The city rate was 18.8, and the country, 12.8. Seventeen per cent. of city deaths were under 1 year of age, and 15.9 per cent. in the country. For old people, however, the rates were: Country, 34.3 per cent., and cities, 26.5. The cities showed a higher rate than the country in tuberculosis, typhoid, diphtheria, scarlet fever, pneumonia, diarrheal diseases, cerebrospinal meningitis, puerperal fever and violence. The country rates were higher for measles, whooping-cough, influenza and cancer.

Tonsillitis was the most prevalent disease, and measles the next most prevalent. Pneumonia was very bad, for it stands fourth and caused 540 deaths. The dreaded cerebrospinal meningitis was the least prevalent. The reports show more typhoid fever than is usual in January. A complete sum-up makes plain the fact that the public health this January was not so good as the same month last year.

LOUISIANA.—New Orleans, 317,000—84,000 colored. Report for February, 1904: Total deaths, 419 white, 213 colored—632; deaths under 5 years—white, 74; colored, 40. Death rates: white, 21.58; colored, 32.85: 24.56. Deaths from typhoid fever, 5 white, 2 colored; influenza, 32 white, 13 colored; tuberculosis of the lungs, 43 white, 46 colored; pneumonia, 51 white, 40 colored; Bright's disease, 27 white, 13 colored; cancer, 19 white, 5 colored; senile debility, 22 white, 3 colored.

MASSACHUSETTS.—Boston, 600,929. Health Department report for December, 1903: Deaths, 934—238 under 5 years; annual death rate, 18.65. Deaths from typhoid fever, 13; measles, 10; scarlatina, 8; whooping-cough, 6; diphtheria, 15; tubercle of the lungs, 103; cancer, 43; organic diseases of the heart, 101; bronchitis, 30; broncho-pneumonia, 38; pneumonia, 108; nephritis, 32; Bright's disease, 17; early infancy—congenital debility, icterus and sclerema—56; other diseases appertaining to infancy, 15; senile debility, 26; accidental traumatisms, etc., 32.

Summary for 1903: Total deaths, 10,632—595 under 5 years; death rate, 17.69. Deaths from zymotic diseases, 2,797—26.30 per cent. of total mortality; diphtheria and croup, 214; erysipelas, 34; influenza, 83; measles, 50; pulmonary and laryngeal tuberculosis, 1,205; scarlatina, 65; smallpox, 13; typhoid fever, 119;

whooping-cough, 108; cancer, 511; Bright's disease, 187; bronchitis, 288; heart disease, 992; pneumonia, 1,265; old age, 287; violent deaths, 575.

Report of the State Board of Health for the year ending September 30, 1902—volume of 649 pages. General health of the State: "In the report for 1901 it was stated that the death rate of the State in that year was the lowest ever recorded. That of 1902, so far as can be estimated from the returns made to the Secretary of State, was still lower, the deaths having been only 47,491, out of an estimated population of 2,937,600, which is equivalent to only 16.17 per 1,000 of the living population. The lowest death rates in any previous years of the last half of the nineteenth century were 17 per 1,000, in 1867; 17.33 in 1859, and 16.82 in 1901. The highest death rate in any year of the half century was that of 1872, which was 22.85, while that of 1849, in the previous half century, was probably still higher. Death rates in the first half of the last century were probably much greater than they were in later times, in consequence of the greater prevalence of infectious diseases."

Thus it appears that the decrease is almost wholly attributable to the decreased death rate from infectious diseases, including tuberculosis and pneumonia, more than compensating for the increased mortality, during recent years, from diseases of the heart, brain and kidneys, and cancer.

The reduction of the death rate from "consumption" from 4.27 in 1853 to 1.59 per 1,000 in 1902, even if in part due to improved registration and diagnosis, means enormously improved sanitation; and the very low typhoid rate, 0.183 per 1,000, has the same significance.

As heretofore, the greater part of the report is devoted to the discussion of questions affecting water, water supplies, sewerage and disposal of sewage and refuse, and to the advice given in individual cases by the board to cities and towns and corporations on these vital questions. On these matters the reports of the board have become the first authority, both in this country and in Europe, and are of the utmost practical value.

There were examined during the year, by the board's officers, 6,256 samples of milk, 3,090 of other food than milk and 1,124 of drugs—in all 10,470, of which 2,989, or 28.1 per cent., were found not to conform to the legal standard; and there were 76 prosecutions, with 74 convictions. A list of 61 tonics and bitters is given, in which from 6 to 47.5 per cent. of alcohol was found.

In the eight years of that work, the board has manufactured and distributed 181,174 bottles of diphtheria antitoxin. Their records show a fatality of only 6.7 per cent. of cases treated during the first two days of the disease, 9 for the third day, 12.9 for the fourth, 15.9 for the fifth and 17.6 for the sixth and later.

There were 928 specimens of sputum and other material examined during the year for the bacilli of tuberculosis; 217 of blood, for typhoid fever, of which 65 were positive, and 61 for malaria, in 17 per cent. of which the malaria parasite was found.

The sanitary legislation for the winter of 1902-1903 records material advances in requiring from the towns monthly instead of yearly reports of vital statistics, thus securing much greater accuracy—relative to the destruction by boards of health of infected material; requiring an investigation and report on garbage and refuse dumped into sea or tide water; in regard to the sale of renovated butter; on separate systems of drainage, inspection of food and drug laws; relative to production and distribution of antitoxin and vaccine lymph.

A new office of the board has been created to collect information with regard to matters of public health, to investigate epidemics and high death rates and to bring the board into closer relations with local boards. Dr. F. L. Morse has filled the position to the great advantage of sanitation.

The statistical summary of disease and mortality, the usual comments on the health of towns and an admirable index complete the report.

The confidence of the community in the board and its high valuation of the work done are indicated by the generous appropriations of the legislature, for the year 1902, of $23,000 for general expenses of the board; of $11,500 for inspection of food and drugs; of $34,000 for the protection of the purity of inland waters; and of $2,500 for the examination of sewer outlets.

MICHIGAN.—The total number of deaths reported to the Secretary of State, for February, was 3,389, an increase of 263 over the preceding month. The death rate rose from 14.7 in January, to 17.1 for February. By ages there were 523 deaths of infants under 1 year of age, 201 deaths of children aged 1 to 4 years, and 1,158 deaths of elderly persons, 65 years of age and over. The principal increase of the month was for the latter class.

Important causes of death were as follows: Tuberculosis of lungs, 189; typhoid fever, 42; diphtheria and croup, 57; scarlet

fever, 32; smallpox, 3; measles, 21; whooping-cough, 27; pneumonia, 487; influenza, 195; cancer, 128; accidents and violence, 175. Diphtheria was somewhat less prevalent than last month, while pneumonia and meningitis increased, the latter especially nearly doubling in amount.

MINNESOTA.—Minneapolis, 240,000. Report for January: Deaths, 216—46 under 5 years. Annual death rate, 9.9. Deaths from typhoid fever, 15; consumption, 25; cancer, 7; organic heart disease, 13; other diseases of the circulatory system, 9; bronchitis, 10; pneumonia and broncho-pneumonia, 26; Bright's disease, 10.

St. Paul, 185,000. Report for January: Deaths, 140—45 under 5 years; death rate, 9.07. Deaths from consumption, 14; pneumonia, 15; broncho-pneumonia, 5; typhoid fever, 2; scarlet fever, 3; cancer, 7.

MISSOURI.—St. Louis, 645,000. Report for January: Deaths, 1,008; annual death rate, 20.2. Deaths from zymotic diseases, 85; scarlatina, 13; diphtheria and croup, 11; typhoid fever, 19.

NEW JERSEY.—Hudson County (Jersey City and environs), 433,573. Report for January: Deaths, 759—204 under 5 years; death rate, 21.0. Deaths from croup, 8; diphtheria, 18; scarlet fever, 19; whooping-cough, 3; typhoid fever, 4; all zymotic diseases, 75; phthisis, 95; bronchitis, 27; pneumonia, 152; cancer, 18; violence, 43; still births, 63.

Newark, 272,000. Report for the week ended February 20: Deaths, 131—40 under 5 years; death rate, 25.04. Deaths from contagious and infectious diseases, 35; diphtheria, 5; scarlet fever, 6; consumption, 16; pneumonia, 25; broncho-pneumonia, 6.

NORTH CAROLINA.—Bulletin of mortality for January summarizes reports of 27 towns, with aggregate population 159,000: white, 92,050; colored, 66,950; deaths, respectively, 93, 140: 233; death rates, 12.1, 25.1: 17.6. Deaths: from consumption, white, 10; colored, 18: 28; heart diseases, white, 9; colored, 12: 21; pneumonia, white, 20; colored, 24: 44.

OHIO.—Cleveland, 430,000. Report for January: Deaths, 544—154 under 5 years; annual death rate, 15.18. Deaths from typhoid fever, 12; diphtheria and croup, 17; tubercle of lungs, 52;

pneumonia, 76; broncho-pneumonia, 12; cancer, 17; heart diseases, 45; Bright's disease, 23; early infancy—congenital icterus, debility, etc.—32; senile debility, 22; still births, 36.

PENNSYLVANIA.—Philadelphia, 1,408,154. Report for week ended February 27: Deaths, 639—184 under 5 years; annual death rate, 25.59. Deaths from typhoid fever, 23; Bright's disease, 52; consumption, 80; diphtheria, 11; measles, 12; diseases of the heart, 50; nephritis, 44; pneumonia, 87; congestion of the lungs, 15; cancer, 30; *smallpox*, 12.

Pittsburg, 354,000. Report for the week ended March 5: Deaths, 164—47 under 5 years; annual death rate, 24.09. Deaths from diphtheria and croup, 2; whooping-cough, 1; typhoid fever, 14; tuberculosis, 10; pneumonia, 27; bronchitis, 6; cancer, 7.

PHILIPPINES.—Report of September, 1903: The diseases causing the greatest mortality, with the number of deaths from each during the month, among the resident population of Manila, were as follows: Convulsions of children and eclampsia, 394; Asiatic cholera, 232; pulmonary tuberculosis, 71; diarrhea and enteritis, 68; meningitis, 43; acute bronchitis, 42; dysentery, 39; chronic bronchitis, 38; beri-beri, 35; malarial fevers, 23; congenital debility, 21; typhoid fever, 15. There were but 3 deaths from plague and none from smallpox.

There were 290 cases of cholera, with 263 deaths, among both residents and transients in the city during the month, and the cause of this sudden rise well illustrates the many difficulties in the way of controlling a population not as yet generally brought to a realization of the importance of sanitary measures. The waters of the Pasig River and certain esteros were recognized as infected with cholera, and the cases previously occurring were largely among those who, in spite of warnings, persisted in using these waters for drinking, cooking and domestic purposes. In the first seven days of September there were 13 cases of cholera, or an average of slightly less than 2 cases daily. On September 7, however, a spring of relatively fresh water was discovered discharging into the salt waters of the bay on the Tondo Beach, below low-tide level, and situated but a few yards below the point of discharge of a large sewer. This appearance of fresh water among the salt was at once made much of by the superstitious and credulous. Various stories were told with regard to the discovery of the spring. Perhaps the one most widely believed was that a

sacred image was seen floating in the water where the spring was bubbling up, and on the attempt being made to pick it up, the image rose into the air and disappeared. It was widely reported among the lower classes that a miracle had occurred and that the spring waters were possessed of great curative powers, and as a consequence hundreds came to drink the waters and carry them home to their friends. The health authorities early appreciated the dangerous possibilities of the situation, but because of the strong quasi-religious aspect of the matter and pending examination into the character of the water, it was not practicable to close the spring immediately. The spring was, however, placed under quarantine on September 13th, there having occurred 120 cases of cholera in seven days. Analysis of the water showed it to have all the character of sewage, it apparently being derived from a break in the sewer discharging in the vicinity of the spring. In a very large proportion of the cases investigated, the persons attacked had drunk the water at the spring or had it brought to them by well-meaning friends for its supposed curative properties. Even after the spring was closed its evil effects were manifest for some time, as the cholera infection had been widely disseminated through the various districts of the city previously free from the disease. During the week following the closing of the spring the number of cases developing were reduced to 79, the next week to 64, and after that there was a steady return to normal. Not less than 225 cases of cholera directly occurred as the result of the discovery of this spring and the credulity and superstition of the lower classes. The better class of Filipinos largely escaped during this outbreak, and of the four Americans attacked three were known to have tempted infection by partaking of food and drink in an unsanitary native shop during the height of the outbreak. One difficulty in combating the cholera infection in this outbreak was found in the concealment of the cases in many instances, as shown by the fact that only 129 of the total cases were reported while alive, while 161 were dead when found.

A matter giving much concern to the health authorities was the appearance of a number of cases of bubonic plague in the city of Cebu, among the persons who had not been outside that municipality for some time and had apparently contracted the disease from a local infection. Investigation showed that one or two cases had occurred yearly since the infection was known to have been introduced in 1900. In all, 13 cases were reported in the city of Cebu during the month, of which 6 occurred in one day,

and of these 4 occurred in the same house. The infection appears to be confined to a very restricted district; from which the measures planned should ultimately be able to eradicate it. Every precaution is being taken to prevent the infection being transported to any other ports in the Archipelago.

PORTO RICO, 953,243.—Report for January: Deaths, 1,901—739 under 5 years; annual death rate, 23.9. Still births, 137; cerebrospinal fever, 14; diphtheria, 1; typhoid fever, 4; grippe, 14; pneumonia, 51; puerperal fever, 10; diarrheal diseases, 38; anæmia, 277; bronchitis, 94; heart diseases, 28; tuberculosis, 155; diseases of the nervous system, 22; accidents and violence, 10; undefined diseases, 1,002.

TENNESSEE.—Memphis, 130,000—59,000 colored. Report for January, 1904: Deaths, white, 111; colored, 126: 237. Annual rates per 1,000, residents only, white, 18.72; colored, 25.56: 21.84. Deaths from typhoid fever, 2; intermittent and malarial fevers, 2; smallpox, 2 (colored); grippe, 5; tubercle of lungs, 4 white, 15 colored; pneumonia, 19 white, 40 colored; Bright's disease, 15 white, 2 colored; cancer, 1 white. Report for the year 1902: Deaths, 865 white, 1,094 colored—a decrease of 17 white, and an increase of 50 colored; total increase of 33, with an increase of population of 10,000. Death rates, white, inclusive of non-residents, 13.10; colored, inclusive of non-residents, 20.25, or a total death rate for the year of 16.32, a decrease, as compared with 1901, of nearly 7 per cent. The death rate among the resident population was, white, 9.64; colored, 16.72, or a total death rate for residents only, 12.82. Of contagious diseases: diphtheria, 70 cases, with 8 deaths; scarlet fever, 149 cases, 11 deaths; typhoid fever, number of cases not reported, 34 deaths—10 less than in 1901. "Tuberculosis was the cause of over 15 per cent. of the total deaths during the year, and this, with the known fact that it is a preventable disease." Deaths from measles, 2; whooping-cough, 10; smallpox, 258 cases, a reduction of 40 per cent. as compared with the previous year. Of the total number, only 12 had ever been successfully vaccinated, and of these 12, none had been vaccinated within ten years.

UTAH.—Salt Lake City, 75,000. Report for February, 1904: Deaths, 111—39 under 5 years; annual death rate, 17.36. Deaths from typhoid fever, 1; whooping-cough, 2; diphtheria, 3; septi-

cemia, 3; tubercle of lungs, 9; pneumonia, 15; broncho-pneumonia, 5; acute bronchitis, 6; organic diseases of the heart, 8; Bright's disease, 5; senile debility, 9; cancer, 1.

VERMONT.—Bulletin for March (quarterly). Disinfectants and Disinfection, by Hibbert W. Hill, M.D.; Sewage Disposal, by X. H. Goodenough, and the Legal Use of Laboratory, by M. J. Wiltse. Excellent practical summaries of the several subjects, followed by Vermont Laws Relating to the Registration of Vital Statistics, by H. L. Stillson, Health Officer of Bennington, and discussion. The Signification of Chlorine and the Practical Use of a Normal Chlorine Map, by C. P. Moat, Chemist, is an important contribution to the study of water pollution in sea-coast regions.

WASHINGTON.—Seattle, 135,000. Report for February: Deaths, 90—27 under 5 years; annual death rate, 7.92. Deaths from tuberculosis, 13; typhoid fever, 2; diphtheria, 2; organic heart diseases, 14; Bright's disease, 5; pneumonia, 7.

WISCONSIN.—Milwaukee, 315,000. Report for January: Deaths, 368—141 under 5 years; annual death rate, 13.32. Deaths from typhoid fever, 7; diphtheria, 11; phthisis, 33; pneumonia and broncho-pneumonia, 49; bronchitis, 20; cancer, 16; organic heart disease, 18; nephritis, 9; congenital debility, 20; senile debility, 18; violence, 11.

Report of the State Board of Health for 1901-1902. A volume of 300 pages. It comprehends the history of smallpox in the State for the period, and urges more stringent laws for its prevention by vaccination. Recommends the establishment of a State sanatorium for the care and treatment of consumptives. Gives the history of the epidemic of typhoid fever at Baraboo, in 1901; urges attention to it as commendable for the prevention of similar outbreaks. Sums up the analyses of the drinking water of a number of localities, and gives the results. The Secretary reports an abstract of the minutes of the meetings of the Board and the gist of correspondence with local health officers on the various phases of the practical work for the suppression of smallpox and other infectious diseases. The number of organized local boards in the State, at the time of submitting this report, was 1,348. "In many places, however, the health officer, who is the executive officer of the board under the law, receives no salary or

compensation for his labors." The legislature is urged to make it mandatory, on the part of the local authorities, to provide a reasonable compensation for health officers.

ON THE RETIREMENT OF DR. W. O. B. WINGATE, as Secretary of the State Board of Health, as announced in our March number, the "Wisconsin Medical Journal" for February says that it "must be looked upon by the medical profession as a distinct loss to the State and a menace to the efficiency of the Board. There are, of course, other men in the State who may become competent to fill the position of Secretary of the State Board of Health, but they are not made in a day, and it is not at all probable that any man who takes up the work without long experience will render as efficient services as Dr. Wingate has given. Dr. Wingate is recognized throughout the whole country as a most excellent sanitarian, and as an authority on this subject. He had brought the State Board of Health to a high state of efficiency and retires with the respect and entire confidence of the medical profession.

"Dr. Wingate's retirement is not in the interest of the people or the public health, nor is it due to any lack of fitness; political reasons only have dictated it. In the language of one of the political members of the State Board of Health—'this plum should be passed around.'

"We know whereof we speak when we say that the method of this retirement is discreditable to those members of the State Board of Health who manipulated the deal, discreditable to the State administration, and unwarranted by Dr. Wingate's long and efficient conduct of the office.

"The public health is too vital a matter to be subjected to the vicissitudes of politics.

"The position of Secretary of the State Board should be occupied by a recognized sanitarian, who should hold office so long as his professional fitness is unquestioned; lack of fitness of the incumbent should be the only reason for a change.

"As physicians we earnestly protest against the mixture of politics with public health. If the politicians of this State were to grasp the force of these facts and were to consult the best interests of the people, we should not again be treated to the spectacle of the underhanded removal of a thoroughly competent medical officer at the period of his greatest usefulness, and for the stupid reason that the 'plum should be passed around.' We understand that Dr. Wingate contemplates retiring altogether

from the Board, and we voice the sentiments of hundreds of physicians when we express the hope that he may remain and continue to give the people the benefit of his ripe experience in public hygiene. This action may not be appreciated by the hungry horde of political plum pickers, but it will be appreciated by the medical profession and the intelligent public."

ONTARIO.—DR. PETER H. BRYCE, who has for many years filled the office of Secretary of the Provincial Board of Health, with great acceptance to the Ontario medical profession, has resigned, and has entered the service of the Federal Government, at Ottawa, as Medical Inspector of Immigration. He will have charge of all medical officers of ports of entry, and, in addition, will supervise the medical arrangements for Indians. His successor in the Ontario Board of Health is Dr. Charles A. Hodgetts, who has been connected with the board for a number of years, having been appointed, in 1900, to the position of Chief Medical Inspector for the Province. Dr. Hodgetts will discharge the duties of both offices, and, in addition, will act as Registrar-General of Vital Statistics.

CUBA.—Havana. Chief Sanitary Officer's report for November, 1903: Total mortality in the District of Havana, 456, two less than in October, but 38 more than in November, 1902. Annual death rate, 21.14.

The increase (38) as compared with the number in November of last year is more than accounted for by the 45 deaths from scarlatina in the present report, while no deaths from that cause figured last year in the corresponding monthly report. That our efforts have not been crowned with immediate results, agrees with the general experience that in dealing with epidemics of this disease, it always requires some months to elapse before it can be brought under control. Now, however, the epidemic is certainly on the wane, for, at the date in which this letter is being written, the number of cases on hand has dropped to 383, with no deaths during the last eight days, while on November 24th there were 576 on hand.

The deaths in Havana as compared with the preceding thirty days have increased only in the groups of diseases of the circulatory apparatus (+ 5), respiratory apparatus (+ 6), early infancy (+ 4), old age (+ 4), external causes (+ 6), showing a decrease in every other group. The deaths among children un-

der 5 years of age have numbered 139, against 112 in the previous thirty days, and 114 in November, 1902. There have been 4 deaths from tetanus neonatorum, against 6 in the preceding month, and 8 in November of last year.

The deaths from tuberculosis have numbered 86, against 77 in October, and the same figure in November of last year.

No case of smallpox, but two imported ones of yellow fever have been recorded in this month of November. Both came on the S. S. "Paloma" from Guanta and La Guayra (Venezuela) on the 8th; one of them died on the day of arrival, the other was discharged cured on the 30th.

The reports from the other districts of the Island are favorable. Sixty-four of the eighty-two municipalities have sent in their reports. They show a total of 1,660 deaths (including the district of Havana) for a population of 1,284,262, equivalent therefore to the annual type of 15.71 per 1,000, this figure being nearly the same as that for the preceding month.

CITY OF MEXICO, 368,777.—Bulletin of mortality for October, 1903: Typhus fever, 27; typhoid fever, 4; smallpox, 8; measles, 3; scarlatina, 5; whooping-cough, 10; diphtheria, 1; grippe, 2; tuberculosis, 149; syphilis, 10; cancer, 20; meningitis, 43; apoplexy, 29; heart diseases, 55; bronchitis, 54; broncho-pneumonia, 44; pneumonia, 57; congestion of the lungs, 9; diarrhea and enteritis, 302; cirrhosis of the liver, 63; hepatitis and abscess, 26; accidents, 23; alcoholism, 11; other causes, 336: 1,291. Annual death rate, 42.0.

## RECENT SANITARY PATENTS.

744621.—Cuspidor; Moritz Rosenweig, Allegheny, Pa.

744766.—Fumigating Machine; Ernest Kimmich, Detroit, Mich.

745154.—Exercising Machine; Ferdinand H. Chlada, Ouray, Col.

745322.—Garbage Box; Thos. E. Burrough, Trenton, N. J.

747488.—Garbage Destructor; Thomas Rooke, Newtown, and John Thrush, Dulwich Hill, New South Wales, Australia.

747960.—Collapsible Protecting Device for Closet Seats; Isak Franken, Frankfort-on-the-Main, Germany.

749269.—Garbage Crematory; Louis F. Decarie, Montreal, Canada.

## BOOK REVIEWS.

THE STORY OF NEW ZEALAND.—A history of New Zealand, from the earliest times to the present, with special reference to the Political, Industrial and Social Development of the Island Commonwealth; including the Industrial Evolution dating from 1870, the Political Revolution of 1890, the Causes and Consequences, and the General Movement of Events Throughout the Four Periods of New Zealand's History. 8vo. Pp. 860. Numerous illustrations. By PROF. FRANK PARSONS, Ph.D., of the American Academy of Political and Social Science; Director of the Department of History in the Bureau of Economic Research, Washington, D. C.; Member of the Boston Bar, and for twelve years past a lecturer in the Boston University School of Law; Author of "The City for the People," "The World's Best Books," "Great Monuments of the Century," "The Power of the Ideal," etc. Price, $3.00, net. Edited and published by C. F. TAYLOR, M.D., 1520 Chestnut street, Philadelphia.

This volume is unique in the literature of the world. It is history, biography, psychology and sociology welded into one, lighted with art and humor, charming as the unfolding of a powerful drama, forceful as clear and vigorous English can make it. Rarely ever before has the political, industrial and social history of a people been gathered into one richly illustrated and delightful volume. Never has a writer had a subject more full of hope for the solution of the most pressing problems of this age. Nor has the relation between successive increments of popular control over the government and the improvement of industrial conditions been more clearly marked. Never has the curve of progress taken an upward sweep so like the path of a rocket.—"From savage cannibalism to the highest civilization in a life time, from one of the poorest countries in the world to the richest (per capita) in half a century, from racial war to racial harmony in a generation, from industrial war to industrial peace in a decade, from charity to justice, competition to co-operation, monopoly to diffusion, despotism to democracy; government by landlords and the money power in their own interest to government by farmers and workingmen in the interest of all as the outcome of a great election, is certainly a record of change in condition and policy, which for quantity, quality and speed of progress is without a parallel."

The Story of New Zealand hinges on scientific colonization with selected immigration in the forties; the public works policy of 1870, that established a national railway system and laid the foundations of the material development of the Commonwealth; the improvement of the electoral system in the eighties; the momentous "Industrio-Political Revolution of 1890, when the common people united at the ballot box to elect men pledged to their interest, swept the monopolists out of power and obtained control of the Government; and the consequent institutional reforms of subsequent years, especially 1891-4, '96, '98, and 1901, by means of which New Zealand has made more progress toward industrial freedom than any other country in the world."

The results of the American Revolution or of the French Revolution were not more remarkable or far-reaching than the consequences of this peaceful revolution by the ballot in the far-away home of the Yankees of the South Pacific. It turned the tide from the concentration of wealth to its diffusion, changed the fundamental control from government by and for the monopolists to government by and for the people, and set in motion motives and forces that have already solved some of the most difficult industrial problems of the age and are moving steadily forward to the solution of them all.

A copious index, excellent table of contents, illustrations and valuable hints in the preface enable the reader to find at once any matter he desires to refer to and the cross references bearing upon it in all parts of the volume; and from the "Information Bureau" (p. xxiii) "the traveler through the book may obtain answers free of charge to a number of special questions" that may occur to him in reading the narrative.

A PRACTICAL TREATISE ON NERVOUS DISEASES FOR THE MEDICAL STUDENT AND GENERAL PRACTITIONER.—By F. SAVARY PEARCE, M.D., Professor of Nervous and Mental Diseases in the Medico-Chirurgical College of Philadelphia; Fellow of the College of Physicians, Philadelphia; Neurologist to the Philadelphia and Howard Hospitals; Member of the American Psychological Association, and of the American Climatological Association; Chairman of the Section on Nervous and Mental Diseases of the American Medical Association. Colored frontispiece; 91 illustrations in the text, many in colors. 8vo. Pp. 422. New York and London: D. APPLETON & Co.

This text-book of practical neurology is written with the intent, and admirably fulfils its purpose, to fill a distinct niche in the literature of the subject of which it treats. The working side of nervous diseases (as to etiology and therapeutics) is especially dwelt upon, believing that treatment is the least understood by students and general practitioners. The chapter on anatomy and physiology, with which the volume opens, so blends and unifies these subjects as to facilitate and insure a pretty clear understanding of the anatomy and functions of the various parts of the nervous system as the essential foundation for the succeeding chapters on general pathology, general symptoms and methods of examination, general therapeutics, and prevention of nervous diseases, etc.; diseases in detail, and their treatment. It thoroughly comprehends the gist of the best literature on the subject, fortified by the author's own experience, and is, altogether, commendable to both students and practitioners.

THE AMERICAN YEAR-BOOK OF MEDICINE AND SURGERY FOR 1904.—A Yearly Digest of Scientific Progress and Authoritative Opinion in all branches of Medicine and Surgery, drawn from journals, monographs and text-books of the leading American and foreign authors and investigators. Arranged, with critical editorial comments, by eminent American specialists, under the editorial charge of GEORGE M. GOULD, A.M., M.D. In two volumes. Volume I, including *General Medicine*. Octavo, 673 pp., fully illustrated. Volume II, *General Surgery*. Octavo, 680 pp., fully illustrated. Philadelphia, New York, London: W. B. SAUNDERS & Co., 1904. Per volume: Cloth, $3.00, net; Half Morocco, $3.75, net.

Volume I.—*Medicine.*—This volume continues to maintain its high place among works of its class. Indeed, the issue of 1904, now before us, if anything, is even better than the excellent issues of previous years. Such a distinguished corps of collaborators as the editor, Dr. George M. Gould, has enlisted as his assistants is sufficient guarantee that the essential points of progress are brought out, and the collaborators' notes and commentations are excellent. In the illustrative feature the 1904 issue fully maintains its reputation, there being fourteen full-page insert plates, beside a number of excellent text-cuts. It is beyond question one of the best of medical annuals, eminently useful to all physicians who would keep abreast with medical progress.

PROGRESSIVE MEDICINE, Volume I, March, 1904, appears in changed form, paper cover, and at a reduced price. As to contents, however, it fully maintains its established excellence. The scope of the present volume includes extensive essays on such important and essentially progressive subjects as cerebral pressure, heart surgery, the treatment of tic douloureux, exophthalmic goitre, the transmission of diseases by insects, the theories as to the etiology of rheumatism, tetanus, paratyphoid, modern views on the nature of hay fever, etc., in which the latest work of foreign and domestic observers is fully discussed.

Considered from every point of view, that of authoritativeness, completeness, adaptation to practical needs, agreeable style, availability for reference, convenient form, satisfactory presswork, telling illustrations, the work is one that the medical profession may well be proud and grateful to possess.

A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. $6.00 per annum. LEA BROS. & Co., Philadelphia and New York.

REPORT OF THE COMMISSIONER OF EDUCATION FOR THE YEAR 1902. Volume II. Pp. 1271.

This volume comprehends reports on Education in Porto Rico and Alaska; the Introduction of Domestic Reindeer into Alaska; Universities, Colleges and Technicological Schools; Professional Schools; Agricultural and Mechanical Colleges; Statistics of Normal Schools; Statistics of Secondary Schools; Manual and Industrial Training; Commercial and Business Schools; Schools for Nurses; Education of the Colored Race; Statistics of Reform Schools; Schools for the Defective Classes; Statistics of Defective Sight and Hearing in the Public Schools; Education of the Feeble-Minded in the United States; Changes in the Age of College Graduation; Education in the Philippines; Statistics of the Public and Private Kindergartens; Illiteracy in the United States; Current Topics, and an Elaborate Index. Altogether (Vol. I, reviewed in February number) the most resourceful fund of knowledge on the most material subject of interest to every American citizen that emanates from the Government Printing Office.

WEATHER FOLK-LORE AND LOCAL WEATHER SIGNS.—By EDWARD B. GARRIOTT.—Prepared under the direction of Willis L.

Moore, Chief of U. S. Weather Bureau, U. S. Department of Agriculture. 8vo. Pp. 152, and twenty-one charts. Government Printing Office, Washington, D. C.

An interesting historical sketch of the study of the weather, and a particularly commendable introduction to a practical knowledge of it on a scientific basis.

CLIMATOLOGY OF CALIFORNIA.—By ALEXANDER G. MCADIE, Professor of Meteorology. Prepared under the direction of Willis L. Moore, Chief of U. S. Weather Bureau, U. S. Department of Agriculture. 4to. Pp. 277.

This volume, for the most part, consists of weather charts, diagrams and statistical tables. Gives a lucid description, however, of the general climatic conditions and their factors depending upon the various conditions of diversified topography, exposure to oceanic currents and season. Pressure, wind and rainfalls are elaborately illustrated, differentiated and tabulated for the different regions and important localities throughout the State.

ANNUAL REPORT OF THE SURGEON-GENERAL OF THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE OF THE UNITED STATES FOR THE FISCAL YEAR 1902.—Pp. 487. Washington: Government Printing Office.

At the close of the fiscal year the personnel of the service consisted of the surgeon-general and 104 commissioned officers: 29 surgeons, 27 passed assistant surgeons and 48 assistant surgeons. There were 181 acting assistant surgeons, 2 sanitary inspectors, 46 pharmacists, and 539 hospital and quarantine attendants.

The Service controls and operates 23 hospitals, of which 21 are owned by the United States, and 2 are leased buildings. Besides these are 120 relief stations, where seamen receive hospital and dispensary treatment.

During the year 56,310 sick and disabled seamen of the merchant marine were treated, of which number, 12,927 were treated in hospital. Two hundred and twelve patients were treated for tuberculosis during the year at the Sanatorium for Consumptives at Fort Stanton, N. Mex. Besides, during the year, the Service has extended aid to other branches of the Government, as follows: To the Revenue Cutter Service in the physical examination of 800 applicants for enlistment; examination as to physical capacity of 1,759 pilots; physical examination of 1,045 surfmen for the Life Saving Service; medical inspection of 746,297 immigrants, and

physical examination of 27 applicants for enlistment in the Coast and Geodetic Survey and Lighthouse Service. At the National Quarantine Stations 5,828 vessels were inspected. Reports of infectious diseases, at home and abroad, are summarized.

Report of work of the Yellow Fever Institute, and of the Hygienic Laboratory, and abstract of the proceedings of the Sanitary Convention of American Republics follow.

Next follows the law changing the name of the Marine Hospital Service, designating it as the Public Health and Marine Hospital Service of the United States, and defining its duties.

Next follows the report of the work in detail for the year, comprehending statistics of hospitals, relief stations, meteorological records, mortality and morbidity, special details of fatal cases, with necropsies; quarantine stations, home and foreign. Illustrations of tent villages for consumptives; boxed and heated tents for winter; exercises of, and farming by the consumptives at Fort Stanton Sanatorium, and several illustrations of the quarantine stations and works, add interest to the report, which, on the whole, is creditable to the Service, and ought to satisfy and silence the still lingering contention for an eminently competent national health service. They have it.

## CONTEMPORARY LITERATURE.

### THE FUNCTION OF SELECTION.

By denying that selection has any power to initiate or actuate developmental changes it is not intended to imply that it has not profoundly influenced the course of evolution in many organic groups. Indeed, it may be claimed that the kinetic theory of evolution affords the first concrete explanation of the workings of natural selection. Vital motion not only makes select influences possible, but it meets the ancient and hitherto fatal objection to the theory of selection, since it shows how characters may originate and develop to the point of utility or harmfulness, when selection can take effect.

The hypothesis of selection as the active principle or causal agency of evolution became illogical and useless as soon as the inheritance of acquired characters was abandoned. The first idea without the second does not account for adaptations. The selection of Nägeli, Weismann, and other believers in a "determining

principle" or "hereditary mechanism" of evolution is a very weak substitute for the Darwinian idea, able only to eliminate the hopelessly unfit, but quite without means of influencing their survivors. The recognition of a continuous and necessary vital motion permits us to understand that the rejection of the environment of a harmful variation encourages adaptation by accelerating the development of any more adaptation which may appear.

All organisms are subject to selective influence, in the sense that variations are rejected with a promptness proportional to their harmfulness in the given environment, but generally this leaves a very wide latitude of possible dangers in which selection does not interfere. The instances are relatively rare in which existence becomes actually dependent upon the development of some one characteristic or quality, and such narrow selection does not strengthen the type, but insures and even hastens its extinction.—From "Evolution Not the Origin of Species," by O. F. Cook, "Popular Science Monthly" for March.

INTERNATIONAL COPYRIGHT.

The passage of a law by Congress to prevent the pirating of literary and art productions exhibited by foreigners at the St. Louis Exposition, made a good impression here [in Germany], and corresponds with the expressed wish of Germans interested in those lines. There was considerable agitation of the matter when many manufacturers of art prints refused to exhibit at St. Louis on the ground that they had no protection from virtual theft. While the enactment of the law, therefore, has been received with satisfaction, the latter is tempered by the consideration that Congress only acted as an afterthought, in order to promote the material success of the Exposition, while ignoring the abiding equities in the matter. In this connection the German press has indulged in some rather bitter comment upon the general subject of copyright conditions in the United States. German laws, it is complained, give the American author and artist absolute protection from piracy, while our copyright law requires the manufacture of books and art prints in the United States before guaranteeing protection. It is a standing source of irritation among German writers that their stories are habitually reprinted by German newspapers in America, without their having any way of securing redress; and newspaper editors, given to plainness of speech, hold us up to contempt as "a State with legally authorized

robbery of intellectual property."—William C. Dreher, in the March "Atlantic."

A WIND-CALL.

Dust thou art, and unto dust,
Playfellow, return thou must;
Lingering death it is to stay
In the prison-house of clay—
Bricks of Egypt year by year
Walling up a sepulchre.

Better far the soul to free
From its close captivity,
And with us, thy comrades, go
Whereso'er we list to blow.
Come! for soon again to dust,
Playfellow, return thou must.
—John B. Tabb, in the March "Atlantic."

UTILIZING VACANT CITY LOTS.

In the April "Delineator" Allan Sutherland writes of a remarkable sociological experiment—no longer an experiment, for its practical value has been demonstrated—that has been tried in several large cities, of changing unbeautiful vacant lots into garden spots. Vacant tracts of land are borrowed from generous owners of real estate, divided into small tracts and loaned to needy people, chiefly old men, invalids and children. They are furnished with seed, tools, etc., and their work is directed by competent supervisors. Among the many beneficent results of the efforts of the Vacant Lots Association, the following are mentioned in the article: Hundreds have found employment who would otherwise have been idle; land has been rescued from weeds and rubbish and made to bring forth fruits and flowers; little children who at best could hope only for a "country week" have found a glorious "country summer"; they have had, in large measure at least, suggestions of country life, with its blessings of pure air, wholesome food and health-giving exercise, and many have already set their faces resolutely to look for pleasant homes in the country; indeed, the demand from suburban property owners is rapidly increasing for these youthful, trained workers of the soil.

OF INTEREST IN THE KITCHEN.—An article in the April "Delineator," on serving the formal luncheon and dinner, contains many practical suggestions, and is illustrated effectively. Dainty Dishes for Easter, illustrated, is of seasonable interest. Luncheon Dishes and Entrées from Left-overs will prove a valuable aid to economy, and Delaware Hot Breads seem tempting enough to dispose of even the objections of cold bread advocates. Delicious Sweet Fritters and Novel Oyster Recipes are other culinary topics.

ABOUT PROCTOR'S.

One of the regular patrons of Mr. Proctor's Fifth Avenue Theater expressed wonder the other day that a theater where such a small admission is charged could profitably offer its guests so many more conveniences than the Broadway theatres, where an admission of two dollars is asked. As a matter of fact, the exquisite courtesy which greets a Proctor patron, from his entrance in the lobby to his departure from the house, is one of the reasons of Mr. Proctor's success. Whether the visitor is seated in the upper gallery or in the box seats, there is every provision made for comfort and convenience in the shape of retiring rooms, writing rooms, smoking rooms, public telephones, and even public waiting rooms, where it is not required that the guest shall be a patron of the house. There are no theaters in the country where greater care is exercised in every detail looking toward comfort than the houses under Mr. Proctor's management, and his long career as an amusement caterer has enabled him to anticipate the every wish of his clientele.

Although Lent is supposed to have a depressing influence upon theatricals, there seems not to have been any appreciable decrease in the attendance at the Proctor houses, where the uniformly excellent shows compel generous patronage. At the same time special preparations are already being made for the Easter holidays, and while Mr. Proctor has made ample provision for the entertainment of the children who attend in augmented numbers during that period, these added attractions will not interfere with the interest of the regular bill, being acceptable to the adult as well as to the juveniles in the audience. One of the secrets of Mr. Proctor's success has been his careful catering to the period, and he never fails to give special recognition to the children in those intervals in the school year which mark certain festal seasons.

# THE SANITARIAN.

## MAY, 1904.

NUMBER 414.

## THE MARYLAND TUBERCULOSIS EXPOSITION.

HELD UNDER THE AUSPICES OF THE TUBERCULOSIS COMMISSION OF MARYLAND, IN BALTIMORE, FOR THE WEEK COMMENCING JANUARY 25, 1904.*

By DR. JOHN N. HURTY, Indianapolis, Secretary of the Indiana State Board of Health.

One year ago, the Maryland Legislature passed a law appropriating $2,000 to pay the expenses of investigating tuberculosis in the State of Maryland. A commission of six was appointed with Dr. Wm. S. Thayer as President, and Mr. John M. Glenn, Secretary. The duty of this commission was to make a report concerning tuberculosis in the State of Maryland, and append to it any recommendations which might be proper. This Tuberculosis Commission immediately associated itself with the Maryland State Board of Health and the Maryland Public Health Association. It was finally decided to hold a tuberculosis exposition, which, as said, opened January 25th for one week.

This exposition was entitled "An Objective Presentation to the People of Maryland of the History, Distribution, Varieties, Causes, Cost, Prevention and Cure of Tuberculosis." The program was carried out exactly. On Monday evening, the 25th, the exposition opened in McCoy Hall of Johns Hopkins University. This hall has a seating capacity of 1,200. Every seat was occupied, and the standing room in the rear was entirely taken up. It is estimated that probably 200 people were turned away.

Dr. Thayer first introduced Governor Warfield, who evidently had informed himself thoroughly upon the importance of combating the public enemy, known as tuberculosis. He expressed himself as favoring any reasonable measure which could be advanced, having for its object the suppression of tuberculosis,

*"Indianapolis Medical Journal" for February, 1904.

spreading destruction on every hand. Mayor McClain was also evidently well informed in regard to the importance of fighting the common enemy, for he, too, declared that he would gladly support any reasonable measure which might be proposed.

A notable speech was made by Dr. Osler, who described in vivid terms the horrors of tuberculosis and its awful destruction. He said, however, that a worse disease existed in Baltimore and Maryland, and it also prevailed throughout the United States. This disease was apathy. Until apathy could be overcome, it would be impossible to fight the monster, consumption. Mr. Frederick Hoffman, of Newark, N. J., the well-known insurance statistician, closed the evening with an address, entitled, "The Statistical Laws of Tuberculosis." At the close of this meeting the exposition was formally opened.

Upon entering the hall, the first thing to direct attention was a "Fisher Tent," invented by Professor Fisher, Professor of Political Economy at Yale University. This gentleman had acquired tuberculosis, and cured himself by outdoor life. He devised several tents, improved them from time to time, and now has a perfect invention. There is no patent on the tent and any one is free to construct it. A fine collection of old publications upon tuberculosis, dating back to the views of Hippocrates, the father of medicine, and some valuable old engravings of famous investigators of the disease, were on exhibition. These books and portraits belong to Dr. Wm. Osler, Dr. H. Barton Jacobs, Dr. D. R. Lyman and Dr. Lewis V. Hamman. There were over 100 volumes in all. Among them was "The Pathology of Phthisis," by Anderson, who was the first to give a correct description of the pathology of tubercle. Still another work was by Laennec. Laennec's own stethoscope, now owned by Dr. Osler, was on exhibition.

Many of the American and European sanatoria were exhibited This was accomplished by photographs, elevations of buildings plans of grounds, charts, maps and diagrams. A most striking sanatorium was the one established and maintained by the Invalidity Insurance Company, of Germany, this company finding it more profitable to cure consumptive patients at its own expense, than to pay their life insurance.

We may especially mention the Adirondack Sanatorium at Saranac Lake, New York, under the superintendency of the well-known Dr. Trudeau. Dr. Trudeau, when a young man, smitten with tuberculosis, read an article, by the famous Brehmer, upon the outdoor treatment of consumption. He found his way to

Saranac Lake, a point forty-two miles from any railroad. Here he lived out of doors for one whole winter and recovered his health. He graduated in medicine, and with the help of Dr. Loomis, of New York, established the now famous Saranac Lake Sanatorium, which is a property valued at $350,000. Dr. Trudeau has not made one cent for his own pocket out of this, but has given the work of thirty years for the humanitarian purpose of saving human life from tuberculosis. Such knowledge, persistence, intelligence and tact as is possessed by this man, would have made him a captain of industry had he chosen to devote his life to self rather than to the benefit of others.

The Muskoka Sanatorium, at Gravenhurst, Canada, was represented by Dr. J. H. Elliott, Superintendent. Everything exhibited had been made by patients. The exhibits consisted of models of shingle-roof tents for outdoor life, photographs, plans, typewritten bills of fare, and a book full of names of patients who had studied the rich flora of the region in the spring time, cataloguing the flowers and plants they found. The sanatorium is situated at the southeast end of Muskoka Lake, a body of water 20 miles long and 10 wide.

The Millett Sanatorium, at East Bridgewater, Mass., was represented by its founder, Dr. Millett. He exhibited a model of the frame sleeping-shack which bears his name. This shack must always face to the south, and is entirely open on that side. It is raised six feet above the ground, has windows on the side and in the rear, thus furnishing absolutely perfect ventilation. Indeed, the person who sleeps in this shack virtually sleeps out of doors.

The Sanatorium at Oderburg, Germany, was represented by photographs, plans and statistics. One of the largest exhibits was made by the Massachusetts State Sanatorium, Dr. W. E. Marckley, Superintendent. As we know, this is the only State Sanatorium for consumptives in existence, but the one in Rhode Island is rapidly approaching completion. Stony Wold Sanatorium, at Kushaqua Lake, N. Y.; the Hospital for Diseases of Lungs, Chestnut Hill, Philadelphia; White Haven Sanatorium, Connecticut; the Bedford Sanatorium for Consumptives, Westchester County, New York, were all represented.

The tuberculosis statistics for the last ten years of Michigan and Minnesota were exhibited in attractive popular form. The tuberculosis statistics of Indiana for the last four years, the entire period of collection of the same, were exhibited by graphic charts. In the Baltimore exhibit were photographs of houses where tuber-

culosis had prevailed for a number of years, giving exact facts in regard to the same, thus bringing forward prominently the truth that houses must be disinfected in which this disease occurs if the combat against it is to be successful. Photographs of tenements and sweatshops were also presented, together with statistics and plans and specifications of the proposed Maryland State Hospital. It will be noticed that the name proposed does not contain the word consumption, this being left out on purpose, as is also the case in Massachusetts. Rhode Island will also simply call her institution, "The State Hospital."

The Loomis Sanatorium presented some interesting features which the other institutions omitted. One was the classification, which was as follows:

1. Early cases, with mild symptoms.
2. Early cases, with severe symptoms.
3. Advanced cases, with favorable symptoms.
4. Advanced cases, with unfavorable symptoms.
5. Long-standing cases, fibrosis predominating.
6. Long-standing cases, ulceration predominating.

The classification of discharged patients was as follows:

1. Apparently cured.
2. Disease arrested.

A large placard on the wall, signed by Osler, was headed:

"How shall we combat bad sanitary conditions in homes?" This question was answered:

1. By an educational campaign in the homes carried out by the Board of Health and a staff of trained visitors.
2. By compulsory notification.
3. By enlarging the powers of health boards so as to deal efficiently with the question of disinfection.
4. By attention to housing of the poor, proper control of tenements, and regulation as to number of persons in each room.
5. All vacated homes to be made sanitary before reoccupation.
6. By condemning all that are unsanitary.

Various mottoes were placed high upon the wall on canvas, and artistically painted. One was in rhyme, as follows:

"Whilst meagre phthisis gives a silent blow,
Her strokes are sure, but her advances slow;
No loud alarms, nor fierce assaults are shown,
She storms the fortress first, then takes the town."

One exhibit was devoted to placards and bulletins prohibiting spitting as proscribed in the cities of New York, Boston, Omaha, Denver, and other places. Of these Boston seemed to outdo all other cities with a placard two feet long. It read as follows:

"You are violating the law against spitting. You are subject to imprisonment or fine, or both." By order of the Board of Health.

"Sputistics." This was the title under which Dr. Fulton, Secretary of the Maryland Board of Health, gave certain counts of sputum defacements around the City Hall. In these statistics ordinary tobacco spits were not counted; only those that had the forbidding appearance which resembles the consumptive sputum. Bacteriological examination disclosed the tubercle bacilli in 5 per cent. The counts ran into thousands, and were presented in a most interesting way.

On Tuesday evening, Dr. Lawrence F. Flick, of Philadelphia, Superintendent of the Henry Phipps Institute for the Investigation, Cure and Prevention of Tuberculosis, delivered an address, entitled, "House Infection of Tuberculosis," which follows. On the stage was Henry Phipps, the multi-millionaire, who had made the institute possible. He will give in all five million dollars for this institute. Five hundred thousand are immediately available. Other gentlemen upon the stage were Drs. Welch, Osler, Jacobs, Abel, Ravenel, Salmon, Potter, and President Remsen, of Johns Hopkins University; Richet, Klebs, Babcock, Bowditch and Kinyoun.

The address of Dr. Flick was delivered at 5 p. m. That evening, at a dinner given by Dr. Osler, Mr. Phipps presented the host a check for twenty thousand dollars, without conditions, simply taking the word of Dr. Osler that it would be applied to outdoor consumptive patients, patients at the John Hopkins Hospital.

Wednesday evening two notable addresses were given. The first, by Dr. Ravenel, of Philadelphia, entitled, "Bovine Tuberculosis, a Factor in Human Tuberculosis." The second was by Dr. Salmon, "Some Observations on the Tuberculosis of Animals." The researches and publications of these two gentlemen have completely overthrown the contention of Dr. Koch, which he advanced in the International Tuberculosis Congress of 1901. Dr. Ravenel showed that even when infection takes place through the intestine, the first and oldest lesion shows in the lung, and in ten animals which he experimented upon, tubercle bacilli were found in eight, showing that the tubercle bacilli can pass through the perfectly

healthy intestine without leaving any trace or mark of its passage, and this takes place in a short space of time. "When we remember," said Dr. Ravenel, "that the chyle goes directly into the thoracic tract and is thrown into the circulation near the heart from which it passes to the lungs immediately, we can understand that infection from the intestine may readily show itself first in the lung." He showed a photograph of the remains of a guinea-pig inoculated with tuberculous material, which, says he, "I think justifies me in saying that tubercle bacilli pass through the intestines in large numbers." He said that he would strongly endorse the statement of Villemi that cattle perpetuate tuberculosis.

Dr. Salmon's article was carefully written and very conservative. He reviewed the classical experiments which he has conducted, and agreed with Ravenel that it is now positively proven that human beings may be infected with tuberculosis by drinking milk from animals infected with the disease and eating tuberculous flesh which is not thoroughly cooked. These two addresses were somewhat technical, yet the lay audience remained and heard them through with quiet and courteous interest.

A truly popular address was delivered by the famous Dr. Knopf, of New York, entitled, "Pulmonary Consumption, and the Possibility of Its Eradication Through the Combined Action of a Wise Government, Well-Trained Physicians, and an Intelligent People." Dr. Knopf evidently caught his audience, for they became very enthusiastic, and when he sat down he was made to appear on the stage several times and bow his acknowledgments.

On Friday evening, the address was by Dr. Geo. Adami, Professor of Pathology, McGill University, Montreal. His subject was: "Facts, Half-Truths, and the Truth About Tuberculosis." Dr. Welch introduced him as one of the most eminent pathologists of the world. This is certainly a high compliment, when we remember that Dr. Welch never uses extravagant language in expressing himself. Dr. Adami's lecture was of necessity somewhat technical. He made a brief historical review of the history of tuberculosis, to make possible a consideration of the principal theories which he wished to correlate and view in the light of the wonderful and almost iconoclastic discoveries of the last few years. He advanced rapidly through the half-truths of the older clinicians and led his audience up to the most important ideas about tuberculosis, but insisting that the truth itself was even yet to be devoutly wished for and seriously and laboriously worked for. "The unity of the tubercle bacillus throughout the animal king-

dom is one of the great themes in which medical men are engaged at present. To-day, so vast is the accumulation of facts that have been garnered in every department of human interest, that to keep abreast of all the advances being recorded in any large branch of science is a vain dream." Continuing, he said: "This is eminently true of medicine. We have reached with a vengeance the days of specialism, and so great is the out-pouring of facts and of new articles regarding even the one subject of tuberculosis, that it is impossible for any one to pose as an authority upon this subject, unless his whole time is devoted to it. I do not come to you as an authority upon tuberculosis. Indeed, but for the insistence of our friend, Dr. Osler, I would not be upon this platform. I have no new facts to bring before you, no record of personal observations that I am prepared to announce. I still remember the old warning of Hippocrates, a warning that appeals especially to medical men, coming as it does from the father of medicine himself, that 'experience is fallacious and judgment difficult.' I will try to point out how in the past, and in the very recent past, in this subject of tuberculosis, experience has proved fallacious; how during the last twenty years, conclusions which appeared to be absolute and sure, based upon exact observations, have been proved to be faulty, or at least imperfect; and now, therefore, it is the part of a wise man to have an open mind and to be prepared to find that which he had regarded as settled, may, through fuller knowledge, be found unsettled; to find we must weigh evidence with the greatest care and be most cautious in arriving at conclusions." . . . "Only a comparatively short time ago the infectious nature of tuberculosis was strenuously denied by most medical men. In 1880 and 1881, the communicability of the disease was being fought over at the meetings of medical associations."

The great achievement of establishing the fact of the communicability of tuberculosis Dr. Adami gave in some detail. He reviewed the fact that Behring is strongly of the opinion that the principal source of tuberculosis is the milk on which infants are fed. Dr. Adami used this as a potent argument for legislation about the proper inspection of cattle, for as Behring holds, there is greater liability for infection by bovine tuberculosis than by human. The speaker, however, expressed himself as inclined to believe that Behring's position on this point was somewhat insecure in that it is not now believed that bovine tubercle bacilli are any more readily implanted in the system than human bacilli. In passing, it may be remarked that Salmon and Ravenel agreed

heartily with Behring for, in general, as already related, the experiments of these gentlemen and recent studies by Theobald Smith plainly prove that bovine tubercular bacilli readily pass through the intestine without leaving a scar, appearing in the fluids of the thoracic duct, and readily producing lesions in the lung tissue. In illustration of the value of recognizing half-truths, Dr. Adami said: "But why, it may be asked, trouble so much about arriving at the exact truth? We admit that bovine tuberculosis is transmissible to man; that is sufficient, and once this is recognized, the duty of the government and of the people is obvious. What is more, all advances so far have been made by the recognition of half-truths, even in biology. No one will grant more freely than I do that if the legislation regarding bovine tuberculosis was based upon an imperfect conception regarding the relative frequency of the conveyance of the disease from cattle to man, that legislation has constituted a very distinct advance. From a purely commercial aspect, whatever be the result of this active controversy, it is the duty of the government, as well as a pecuniary advantage to the farmer, to see that tuberculosis be, if possible, eradicated from our herds, and present legislation might go much further toward accomplishing this end." In regard to full-truths, Dr. Adami said: "I use this term merely for convenience, confessing its inaccuracy, hoping in this connection it is fully understood. If half-truths are useful, and if we have to be in the main content with them, it is the duty of the man of science to seek ever after a nearer realization of the whole truth. He must not expect to attain it. The whole truth in anything mundane seems almost beyond our power. But if we cannot attain thereunto it is for the man of science to strive ever to approach near to it, to be dissatisfied with half-truths. He must neither accept them as adequate nor get into the habit of regarding them as fixed. His new facts lead to the demonstration of the imperfection of those half-truths. He must ever be prepared to modify his views. Facts are not truths; true in themselves, they may, if insufficient, or if they do not bear upon the factors concerned, lead away from the truth, and in medical problems so many factors are involved that the half-truth is ever to be guarded against."

The social features of the tuberculosis exposition were simply delightful. Dinners were given by Drs. Osler, Welch, Jacobs, Thayer and Fulton, and every night, after the lecture, a social gathering was held at one of the clubs. Those from abroad who

were specially invited, attended luncheons and teas in elegant homes, provided with art galleries and conservatories. Tea was served in halls where the pictures of Rubens and other great artists looked down upon the company, and where the statues of great sculptors furnished decoration, enlightenment and pleasure. In one instance, a dinner was given in a conservatory where bananas and oranges were growing, and where roses and orchids were in bloom, where spring prevailed, while outside the winter king ruled boisterously. It was, indeed, encouraging to know and fully realize that men who live amidst such surroundings had not lost the instinct of charity, and could leave them to add individual effort to pecuniary gifts, for the purpose of rescuing the poor and miserable from the grip of tuberculosis.

While not so directly connected with the topic, I may step aside to notice a delightful clinic at Johns Hopkins. Dr. Osler was the presiding spirit. Besides the students, all clothed in white gowns, there were present the well-known blind physician of Chicago, Dr. Babcock, also Drs. Klebs, Adami, Ravenel, Flick, Keene, Bracken, Richet, Elliott, Brown, and others. The amphitheater was constructed in accord with special ideas of Dr. Osler. On either side of a floor space, 30x15, were ranged in rows the students in attendance. A wheeled couch and a table, with an assistant and the speaker, occupied the open space. The first case was one of Bell's paralysis. No special features attended it, except the student who came forward and gave, in lucid and intelligent language, his observations upon the case. The next person introduced was a negro, 60 years or more of age, who was afflicted with tuberculosis, which was advanced. Dr. Babcock, the blind physician, was called upon to hold the clinic and show the class and the visitors present how he made his diagnosis. The man had been told not to cough, and not the slightest hint had been given as to the disease, but those who had their eyesight could plainly make out the trouble. Dr. Babcock asked two or three questions, passed his fingers rapidly over the face of the patient, then down over the chest and back, and immediately said, "This man has tuberculosis, well advanced." More than this, in passing his hands over the back, his delicate touch fell upon an artery which told him instantly that an aneurism existed. This had not been made out at this stage by the clinician in charge and the other physicians present. The blind doctor was heartily applauded for his achievement. Another clinic concerned the subject of "Intestinal Seeds." A bright young man was called forward to give

an account of his investigations and studies. He presented, in an ordinary pill-box, the seeds which had been taken from the patient. He had also neatly labeled and carefully prepared, seeds of all kinds of berries for comparison, and by this method had determined that the seeds in questions were from raspberries. The work of the student showed careful research and observation.

The perfect cleanliness which prevails in every department of the Johns Hopkins University was very noticeable. At surgical clinics the students were clothed in white gowns, and look as sharply as you might, not one spot could be found where spitting had occurred. In the anatomical department, of which Dr. Mohl is the head, although the tables of the dissecting-rooms were all filled with dissecting material, still not the faintest odor of decomposition could be detected. Only the faint odor of carbolic acid was discoverable. Here perfect order prevailed. There was conversation among the students, but it was not continuous, and only carried on in low tones, and never upon any other subject than the one they were studying. Here again, were white gowns, even warmth and perfect ventilation. Such perfect record-keeping as exists in this department it would be hard to find anywhere. Dr. Mohl was able, by his great catalogues, to trace any subject that had ever come into his department. Also the name of every student that had dissected that subject. His system was simply perfect, and would rival that of the accounts of any bank. All through the second and third years four half-days of each week are given to the students of anatomy. The student is marked upon his work, his deportment and his examinations. Professor Meyer, now Professor of Anatomy at the Indiana University, was an assistant in this department. Hence it was that Dr. Mohl was familiar with the recent proposition of President Bryan to have the first two years of a four years' medical course taught in the Indiana State University, and its rejection by the State Board of Medical Registration and Examination. Dr. Mohl evidently did not understand the situation, believing the profession of the State might have made a very grave error. He expressed himself as very glad to hear the other side of the matter, as construed by the State Board, and agreed that possibly an effort had been made on the part of the University to progress too rapidly without the necessary clinical advantages and the essential "medical atmosphere."

We were shown every step in the preparation of dissecting material. After thorough cleansing and washing out of the arterial

system by pressure, the body is injected with a fluid composed of 10 per cent. glycerine, 3 per cent. carbolic acid, 50 per cent. alcohol and 37 per cent. water. After this, it is placed in the same fluid for a period of one to two months, then carefully wrapped and put in cold storage. Bodies thus prepared are perfectly flexible, soft, and in fine condition for dissection after five years. A visit to the Department of Pharmacology interested me greatly. The head of this department, Dr. John J. Abel, has done an enormous amount of original research work in physiological chemistry. He was among the first, if not the first, to call attention to the products of the suprarenal gland. It is known that the name adrenalin has been given by a commercial firm to the arterial pressure-raising substance derived from the suprarenal glands. Dr. Abel prefers his term "epinephrin," and he has determined that the so-called adrenalin is really epinephrin-hydrate. We were shown many combination products of epinephrin. One of the most interesting was with gold, a beautiful yellow compound, the physiological value of which was not yet determined. The iron compound with epinephrin was decidedly interesting, because a few physiological experiments had indicated that it would be a very valuable addition to our materia medica. At the present time Dr. Abel is contending with Aldrich in regard to the ultimate composition of epinephrin. The difference between these gentlemen, at this time, consists of one atom of carbon. "This may seem a very small matter," said Dr. Abel, "but both formulas cannot be true, and we cannot remain satisfied until the truth is known."

In the general visit to the hospital, passing from ward to ward, and bed to bed, one is struck with the perfect business management of the Institution, as shown in all the records, in the perfect cleanliness and in the order and discipline of the attendants. The ventilation is perfect, yet despite this perfect ventilation, patients are placed in the open air as much as possible. Wide and long terraces reach from building to building, guarded on either side with iron railings. Upon these terraces everywhere are to be found patients suffering from all complaints. Of course, they are in their beds, well tucked in, and perfectly comfortable, but enjoying the outside air and the sunshine, if any exists. All diseases of the respiratory tract are treated in the open air as much as possible. Cases of influenza are found to improve much more rapidly in the open air and sunshine than when protected in the house. Dr. Millett, of the sanatorium at East Bridgewater, treats

pneumonia in the open air with the best results, but this treatment has not yet been adopted at Johns Hopkins. Cases of typhoid fever are very materially and plainly helped by open-air treatment.

---

In closing this report, I wish to impart the news, which every physician of Indianapolis will receive with delight, and that is, that both Dr. Welch and Dr. Osler have promised to come to Indianapolis this year to be part of the teaching corps which will instruct the next Indiana Health Officers' School. In any case one of these gentlemen will be present; their relations to the University render it extremely difficult for them to both be absent during the medical course of instruction.

---

## THE STATISTICAL LAWS OF TUBERCULOSIS.*

By FREDERICK L. HOFFMAN, Actuary of the Prudential Life Insurance Company, Newark, N. J.

---

Tuberculosis causes annually more than 150,000 deaths in the United States at the average age of 35 years. At this age the normal after-lifetime is about thirty-two years, so that the real loss of life covered, measured in time, is represented by 4,800,000 years per annum. If we assume that the net value of a year of human life after age 35 is at least $50, the real loss to the nation resulting from the disease (a large proportion of which is known to be needless) may be estimated at $240,000,000 per annum. These astounding and almost incomprehensible figures are far from being an exaggeration, but let us assume that only one-half of this mortality is preventable, and we have a net possible saving to the nation of $120,000,000 per annum. This estimate does not take into account the social, moral and sentimental value of at least 100,000 lives, which, under different conditions, might reasonably hope to continue for many years. The mortality from tuberculosis is, therefore, a problem compared with which all other social problems of a medical character sink into insignificance, and it is safe to say that the possible prevention of a large

*Abstract of paper read at the Maryland Tuberculosis Exposition, January 25, 1904—From "Maryland Medical Journal," February, 1904.

portion of the mortality from this disease is justly deserving of the solicitude, the active personal interest and liberal pecuniary support of all who have the real welfare of the people of this nation at their heart.

Any attempt to deal successfully with the problem of tuberculosis prevention must needs proceed along the lines of a comprehensive statistical investigation, for the laws and tendencies of this disease are most intelligently expressed by statistical averages reduced to a uniform basis, readily susceptible of critical analysis. It is not necessary, however, nor perhaps advisable, in an address of this kind to make any extended use of statistics, for the concepts of the problem can be readily expressed in definite language, without superfluous ratios and percentages.

It is my purpose to deal briefly with the general facts of the tuberculosis problem, which, as far as I am able to judge, are necessary for a rational understanding of the methods and means best adapted to diminish the largely unnecessary mortality of this disease.

On the outset we are confronted with a fact which is generally ignored by those who would advance the cause of disease prevention by modern methods of ordinances and laws prohibiting spitting in public places, the segregation of tuberculosis patients, sanatoria treatment, etc., namely, the all-important truth that the *mortality from tuberculosis has progressively declined in American cities for more than half a century.* For illustration, in New York City the death rate from consumption per 10,000 of population was 42 during 1851-1860, against 39 during 1871-1880, and 27 during 1891-1900. In Boston the rate was 46 during 1851-1860, 41 during 1871-1880, and 26 during 1891-1900. For Baltimore we do not have the information previous to 1875, but we find that the rate decreased from 36 during 1876-1880, to 28 during 1886-1890, and to 21 during 1896-1900. (This includes the colored element.) The tendency toward a progressive decrease in the mortality from this disease from decade to decade during the past forty to sixty years has been practically the same in all of the principal American cities. In other words, the observed decrease in the mortality from tuberculosis antedates by many years the discovery of Professor Koch and the relatively recent view that the disease is of a highly infectious character and is transmitted from man to man.

It is necessary, then, for us to consider, first, the probable causes responsible for the decrease in the mortality from tuberculosis

without direct social measures or conscious efforts to produce this result. It is always hazardous to advance views for which we have no definite statistical basis of observed experience, but from a careful study of the available facts brought out in our social and industrial history, I have come to the general conclusion that *the decrease in the mortality from tuberculosis in past years,* or, let us say, previous to 1890, *must be ascribed primarily to a profound change for the better in the mode of life of the masses.* I would include in this term all the elements of social progress that can be determined or measured by the statistical method, and that can be confirmed by impartial medical and other investigations.

This general conclusion I find to include at least ten distinct or special factors, any one of which and all of which in conjunction with each other would seem to me to have been of sufficient importance to produce the phenomenon of a decreasing mortality from tuberculosis without direct social or legislative measures.

*First.*—We may attribute the decrease in the mortality from tuberculosis to vast and far-reaching improvements in the housing of the masses of the population in cities, of which formerly, say, forty or fifty years ago, a large proportion lived in cellar dwellings, in houses located on damp and unwholesome subsoil, or on areas filled in with garbage and other health-destructive matter.

*Second.*—There has been a vast improvement in the direction of providing tenements and dwellings with more light and better ventilation, and prohibiting entirely the use of dark interior and ill-ventilated rooms for living and sleeping purposes.

*Third.*—The evils of overcrowding, while still considerable, and often requiring drastic police interference, are, without question, less serious at the present time than formerly.

*Fourth.*—Intemperance, while still an evil of great magnitude, is now less of a bodily destructive character than fifty, or even thirty, years ago. While the average consumption of liquor *per capita* may have remained the same (this being a fact difficult to determine), the statement cannot be called in question that the general mass of our people lead to-day more temperate lives and more free from the vice of gross intoxication than during the earlier years of our social history.

*Fifth.*—There has been a considerable improvement in the feeding of infants and adults with food of more nutritious quality, making for the building of a body of a higher degree of disease resistance. We have substituted the ideal of a robust body

and vigorous health, especially among women, for the anæmic type of girls so common thirty years ago. This result is, in a large measure, due to the greater amount of outdoor life, and also to the public parks and children's playgrounds, which a more enlightened public opinion demands.

*Sixth.*—Improved economic conditions, especially in the direction of higher wages and shorter hours of labor, substituting possibilities of rest and recreation in place of overstrain and overwork and bodily exhaustion common under earlier conditions of industrial life. What, for want of a better term, may be spoken of as the half-holiday, or vacation habit, is becoming a regular feature of life, even with the most humble laborer. Night labor, as far as possible, is gradually being done away with, resulting in a more healthy development of body and a higher degree of disease resistance.

*Seventh.*—Child labor, formerly exceedingly common, is now practically prohibited and made impossible by law in most of the States. Constitutions which, under former conditions, would have been prematurely weakened and impaired are now permitted to reach a sufficient degree of maturity to more successfully withstand the inherent disease-producing conditions of factory life and other indoor occupations. It is a well-known fact that occupations, such as the potteries, glass works and similar industries, in which children formerly commenced to labor at very early ages, are the occupations in which the after-lifetime is very considerably below the average and in which tuberculosis and respiratory diseases are of more than common occurrence.

*Eighth.*—Unwholesome and unsanitary conditions of factory life, of serious effect on health and longevity; dust-producing occupations, especially destructive to lung tissue, and numerous other evil conditions surrounding men and women employed in ill-ventilated factories and workshops have been largely done away with in the light of modern sanitary science through factory and labor legislation. Any one who has studied the diseases of occupation in this country and abroad will concede that these changes for the better in the conditions of factory life have been indeed profound and far-reaching in making for a healthier and a longer life.

*Ninth.*—School life, or the conditions surrounding children at the impressionable age of the educational period, have been materially improved by slow degrees from the close, overheated schoolhouses of the past to properly lighted, sufficiently roomy and

properly ventilated schoolhouses of the present. Children exposed to the earlier conditions must, unquestionably, have had their health undermined and their disease resistance lowered as the result of hours spent under unsanitary and otherwise unsatisfactory conditions which, in the light of a better knowledge and understanding, are no longer permitted to exist. While much remains to be done to improve the hygienic conditions of school life, a vast amount of improvement in this direction has been made during the past fifty years.

*Tenth.*—There remains the general social improvement of the mass of our population, making for a higher standard of life and a more deliberate view of life and the worth and value of living. There has never been a time when the commercial value of human life was so clearly recognized as it is at the present time, and the will to live and the will to live well was never before so strongly emphasized in the life of the people. All this, I am satisfied, must have contributed much toward the development of a type less likely to fall a victim to tuberculosis under modern conditions than under the less satisfactory conditions of the past.

We may now consider *the statistical laws* which underlie the occurrence of tuberculosis in modern life. Most of the conclusions which follow are derived from census reports on vital statistics, from the reports of local boards of health, the experience of life insurance companies, and special investigations which need not to be enumerated. As a general rule, the observations and conclusions are limited to the mortality from consumption, which forms approximately 96.5 per cent. of the total mortality from tubercular diseases. Unless otherwise stated, the rates used are 10,000 of population.

1.—The mortality from consumption in the United States has decreased from 25 per 10,000 in 1890, to 19 in 1900. The fall in the death rate during the decade has been 24 per cent.

2.—The mortality from consumption is greater in cities than in rural districts, but there are important exceptions to this rule, to which reference will be made later. The city death rate from consumption in 1900 was 20 per 10,000, against 13 for the rural districts.

3.—The decrease in the mortality from consumption during the decade has been 6 per 10,000 for the cities, against not quite 5 for the rural districts. The social and material progress and changes, to which reference has been made in the introductory

remarks, has, without question, been greater in the cities than in the country districts.

4.—The mortality from consumption is greater among men than women; but here, again, we meet with important exceptions to a general rule. The death rate of males in 1900 was 19 per 10,000, against 16 for females.

5.—The mortality from consumption among males in the cities was 21 per 10,000, against 16 for females—a difference in favor of females of 5 per 10,000 of population. In the country districts the death rate was 12 for males and 14 for females—a difference of 2 per 10,000 in favor of males. In other words, the mortality of males in cities is higher than the corresponding mortality of males in rural districts; also the mortality of females in cities is higher than the corresponding mortality of females in rural districts. These facts are deserving of careful consideration.

6.—The decrease in the mortality during the decade 1890-1900 was 5 per 10,000 for males and six for females. This fact would seem to warrant the conclusion that, in a general way, the conditions making for a lower death rate from consumption have been more favorable to women than to men, and the tendency toward a lower death rate has been more pronounced in the case of women in cities than in rural districts.

7.—The death rate from consumption is extremely high among the colored population, including in that term the Chinese and Indians, but primarily and almost exclusively the negro element. In 1900 the death rate of the white population was 17 per 10,000, against 49 for the colored element—a difference of 32 in favor of the white race. In other words, among the same number of population to every 100 deaths from consumption among the white population there were 288 deaths among the colored, indicating the most extraordinary continued predisposition to death from a particular disease of which we have record in the annals of hygiene and vital statistics.

8.—The death rate of the colored population in cities was 50 per 10,000 against 19 for the whites. In the rural districts the death rate of the colored was 32, against 13 for the whites. If we reduce the rates to a common basis, we find that to every 100 deaths of the white population in country districts there were 246 deaths among the colored population. In other words, the higher mortality of the negro population from consumption and other tubercular diseases is, unquestionably, primarily the result of race.

9.—During the decade 1890-1900 the decrease in the mortality

from consumption was practically the same for both races, having been 5.65 per 10,000 for the whites, and 5.55 for the colored. In the rural districts the decrease in the mortality of the white population was 4.6, and for the colored 4.3. In other words, as far as it is possible to judge, the decrease in the mortality from consumption has been largely the result of an improved environment affecting both races to practically the same extent. The wide variation in the mortality of the two races from this disease remains practically the same, and apparently unaffected by the more favorable conditions under which the present negro population lives.

10.—The native white population of native stock—that is, those having both parents native born—experience a death rate from consumption considerably below the general average. In 1900 the rate was 13 per 10,000 for the native born of native stock, against 17 for the aggregate white population. The death rate decreased from 17 in 1890 to 13 in 1900. Accurate comparison cannot be made with the population largely or wholly of foreign extraction, except for a few nationalities which have been in this country for many years.

11.—The foreign element in the United States in vital statistics is usually determined on the basis of the country of birth of the mother. This has been found the most satisfactory and accurate method yet devised to ascertain the true relation of nativity to disease predisposition and mortality. Limiting our observations to ages 15 to 44, we find that the death rate from consumption of those with mothers born in the United States was 16 per 10,000, living at this period of life, 15 for the English, 20 for Canadians, 21 for Germans, 23 for Scandinavians, 24 for Bohemians and 43 for the Irish. In other words, from the limited investigations which have been made into this branch of vital statistics, the Irish population in the United States experienced a death rate from consumption far in excess of the corresponding death rates of other nationalities. The rate, however, is far from being as high as the death rate of the colored population at this period of life, which was 59, compared with 43 for the Irish and 23 for the total white population.

12.—The average age at death of persons dying from consumption is 35 years, but the true incidence of the mortality falls upon ages 15 to 35, when from 35 to 50 per cent. of the deaths from all causes are the result of tuberculosis. In other words, at ages

15 to 35 from one-third to one-half of the entire mortality is the result of consumption and other tubercular diseases.

13.—The death rate per 10,000 living at different periods of life was 4 at ages under 15, 25 at ages 15 to 43, 23 at 45 to 64, and 26 at 65 and over. In proportion to the number living, the mortality from consumption at ages over 15 is about the same, speaking generally, throughout life. It is therefore of some importance for us to consider the indicated improvement in the mortality from this disease in its relation to age, for, other things equal, a subsequent decrease in the consumption mortality at ages 15 to 44 is of far greater importance to the nation than a similar decrease in the mortality from this disease at more advanced ages.

14.—The mortality of males from consumption exceeds the mortality of females at all age periods by 3 per 10,000 at ages 15 to 44, by 12 at 45 to 64, and by 6 at ages 65 and over, or, speaking generally, the difference in the disease liability of the two sexes is most marked at ages 45 to 64, when the after-effects of factory and indoor life, as well as of intemperate habits, become more apparent.

15.—This law, however, is subject to a very important exception. While the death rate of males is higher than the death rate of females, this is only true for the cities, for in the country districts, at ages 15 to 44, the death rate of men is 16 against 20 for women—a difference which we would ascribe to the after-effects of pregnancies, less properly taken care of in rural districts than in the cities, where proper medical attendance is more readily available and more generally taken advantage of.

16.—The decrease during the decade in the mortality from consumption at the three age periods considered has been 7 per 10,000 at 15 to 44, 9 at 45 to 64, and 11 at 65 and over. In other words, the relative decline in the death rate has been most pronounced at the comparatively unimportant age period of 65 and over, while the decrease has been least at the age period when the commercial and economic value of human life is highest.

It would carry us too far to further extend this analysis by sexes and ages, with distinction of life in cities and rural districts, but we may point out that at each period of life the decrease in the mortality from consumption during the decade has been greater in the cities than in the rural districts.

17.—Conjugal condition profoundly modifies the mortality from various causes, and much, if not most, from consumption. A critical analysis of the vital statistics by conjugal condition must needs take into account the elements of age and sex, but this

would make a brief discussion impossible, while a lengthy discussion would be out of place. Males at ages 15 to 44 show the highest death rate from consumption among the widowers and among the singles at ages 45 and over. We would attribute this excessive mortality at ages 15 to 44 among widowers to the probable transmission of the disease from wife to husband, while at ages over 45 we would attribute the excessive death rate of the single from tuberculosis to habits of life detrimental to longevity.

18.—Among females the death rate from consumption is highest among widows at ages 15 to 44, and among the single at ages 45 and over, but the differences are not so pronounced as among males of different conjugal status.

19.—Both sexes show the lowest death rate from consumption among married at practically all periods of life. The death rate of married women at ages 45 to 64 from consumption is exceeding low—only 15—compared with 22 for males of corresponding age.

20.—Married women at the child-bearing period—15 to 44—experience a higher death rate from consumption than married men, the rate being 21 for the former, against 24 for the latter. The difference is significant, but not very great. It is quite probable that these differences are greater in rural districts, but we have not the necessary data to confirm this view.

21.—Widowers at all ages show an extremely high mortality from consumption when comparison is made with the mortality of widows of corresponding ages. At ages 15 to 44 the death rate of widowers was 67, against 36 for widows; at ages 45 to 64, widowers 49, widows 19; and at ages 65 and over we find the rate to have been 31 for the former, against 21 for the latter.

22.—We note further an anomaly in vital statistics and in marked contrast to the general laws of mortality, that the death rate from this disease among widowers is highest at the youngest ages, while lowest at the most advanced period of life (67, 49, 31). This is highly significant, and would seem to warrant the conclusion that the higher mortality of widowers at early ages is the result of disease transmission from wife to husband. Conversely, there would seem to be a lesser liability in the transmission of the disease from husband to wife. The probable reasons for this cannot very well be discussed on this occasion.

23.—Occupation has already been referred to as an element making for a high death rate from consumption among males at certain ages and under certain well-defined conditions, especially

of city life. We are confronted, however, with the difficulty of briefly discussing this aspect of the problem on account of the necessity of a critical analysis by age periods and length of trade life. The subject-matter is complicated by the fact that the census reports do not show the mortality of males in specified occupations from specified diseases by specified periods of life. Since the age distribution of persons in different employments varies widely, it would be misleading to compare crude death rates except with the greatest possible caution in selected industries, where the elements are, as far as known, comparable.

Males in all occupations, according to the census, experience a mortality from consumption of 24 per 10,000. In the professional occupations, where the average age of the living is quite high, the relative mortality is correspondingly low, being 12 for clergymen, 14 for lawyers, and 17 for physicians. It, however, is safe to say, from a study of other data, that the mortality from this disease among men in professional occupations is, in fact, exceedingly favorable. Persons in the mercantile and trading class experience an average death rate of 17 per 10,000, hotel-keepers and boarding-house keepers a rate of 21, saloon and restaurant keepers a rate of 29, barbers and hair dressers a rate of 33, laborers a rate of 37, book-keepers a rate of 40, servants a rate of 43, printers a rate of 44, cigar makers a rate of 48, and stone cutters a rate of 54. These remarkable differences in the death rate from consumption among men in different employments are extremely suggestive and deserving of the most careful consideration, for, in the writer's opinion, there can be no more effective measures tending to the stamping out of the disease than active efforts in the field of the diseases of occupation and a propaganda against the still considerable unhygienic conditions of factory life. The high death rate of servants, which is confirmed by corresponding data for female domestics, is also highly significant.

(To meet the possible criticism of the use of these data, which ignore the age factor, I have carefully examined into the more scientific reports on the vital statistics of England and Wales. If we take, for illustration, the age period 25 to 34, we find that the death rate of clergymen from consumption was 16 per 10,000, 17 for physicians, 19 for lawyers, 23 for artists, and 40 for musicians. Among men in commercial and agricultural employments the death rate was 17 for agriculturists, 22 for grocers, 27 for manufacturing chemists, 28 for druggists, and 41 for general

shopkeepers. For persons in general trades and industries the death rates were 49 for tobacconists and cigar makers, 48 for book-binders, 48 for barbers, and 40 for shoemakers. Among persons in recognized unhealthy occupations the death rate was 60 among hotel and inn servants, 51 among glass workers, 50 among printers, 47 among carpet and rug manufacturers, 43 among zinc workers, 42 among copper workers, 41 among dyers, 41 among saloon-keepers, and 39 among brass workers. Among persons in recognized dangerous and unhealthy occupations the rate was 43 among lead miners, 34 among tin miners, 31 among copper miners, and 28 among coal heavers. Among common laborers, servants, etc., the rates were 70 among costermongers and hawkers, 44 among messengers and porters, 34 among general laborers, and 23 among domestic servants. Among men in all occupations at the age period of 25 to 34 the death rate from this disease is 26 per 10,000, which compares with 34 for persons in recognized unhealthy occupations, 27 for persons in general trades and industries, 21 for persons in professional occupations, and 32 for common laborers and servants.)

24.—The season of the year, as far as it is possible to judge, affects the mortality from consumption only to a limited extent. The mortality in the United States is highest during March, April and May, and lowest during August, September, October and November. The month of highest mortality during the census year 1900 was March, with a monthly death rate of 1.8 per 10,000 of population, and the lowest were June and September, with monthly death rates of 1.3. The information is not yet sufficient to warrant final conclusions.

25.—The mortality from tuberculosis varies widely in different localities, but we question seriously whether these differences are the result of climate rather than of material variations in the age, sex, race, nativity and occupation distribution of the population. The registration area of the United States, unfortunately, does not include a sufficient number of representative States, but, limiting our observations to New England, New York and New Jersey, we do not find the evidence conclusive that local variations in the death rate have been the result of variations in climate. As far as it is possible to judge, the variations appear to be rather the result of occupation, etc., than of climate.

25a.—In illustration of this point, I may add a summary comparison of the mortality from consumption in certain American cities during the five years 1896-1900. The rates are per 10,000

of population and are as follows: Cities with high death rates: San Francisco, 29; Orange, N. J., 27; New York, 26; Newark, N. J., 26; Pueblo, Col., 26; Jersey City, N. J., 25; Boston, 24; Brooklyn, 22; Cambridge, Mass., 22; Paterson, N. J., 22; Providence, R. I., 22; Holyoke, Mass., 21; Worcester, Mass., 21; Cincinnati, 21; Philadelphia, 21; Lowell, Mass., 21.

Cities with low death rates from consumption: Passaic, N. J., 17; Manchester, N. H., 17; Binghamton, N. Y., 17; New Bedford, Mass., 16; Fall River, 16; Chicago, 15; Lynn, Mass., 14; Gloucester, 14; St. Paul, 14; Milwaukee, 13; Minneapolis 12; Spokane, 12.

In Southern cities the mortality from consumption is, as a rule, very low among the white population: New Orleans, 22; Washington, D. C., 19; Memphis, 17; Augusta, Ga., 16; Nashville, Tenn., 16; Atlanta, 16; Richmond, Va., 14, and Charleston, S. C., 14. These comparative statements are extremely interesting and valuable in that they localize the mortality from consumption with sufficient accuracy to point out where active efforts to suppress the disease are needed most. It is a matter of regret that I have not the data for Baltimore, since the health reports do not contain the separate tabulation of the deaths by race.

26.—The census data are not published in sufficient detail to permit of a rearrangement of the mortality by geographical sections of the country according to latitude, longitude and altitude, or with special reference to certain topographic features, such as location of cities on lakes, in river valleys, at high altitudes, etc. My inquiries into the possible relation of these conditions to the distribution of consumption are as yet in a very unsatisfactory state, and no definite conclusions can be advanced. There are other factors which have to be taken into account, as, for illustration, the attraction of a large number of tuberculosis patients to cities like Denver, Los Angeles, San Antonio, etc., which would tend to produce a high local death rate from this cause when, as a matter of fact, the climatic conditions are in all probability exceedingly favorable to a cure, if not a certain prevention of the disease.

27.—A study of the relation of consumption to the elements of climate, which has almost a literature of its own, confirms the view that certain climatic elements unquestionably favor the development of the disease, while others materially hinder it. The writer has not made a sufficiently extensive study of these elements to warrant him in advancing definite conclusions.

28.—The relation of the mortality from consumption to surface

geology, soil and topography has never been exhaustively investigated, or at least not reported upon in such a manner that the results can be utilized in this summary of the general elements of the mortality of this disease. It is, however, a generally accepted theory, and an apparently well-proven fact, that the mortality from consumption is highest in localities with a damp soil or a clayey subsoil, making natural drainage difficult, if not impossible. The vital statistics of Baltimore have been investigated with this end in view, but the results as published by Dr. Billings are not conclusive. It, however, is reasonably safe to say that the death rate decreases with increasing altitude, and that the death rate decreases with increasing dryness of the atmosphere.

29.—The relation of the mortality from consumption to class of dwellings, tenements and institutions, such as prisons, asylums, convents, etc., has been investigated to a reasonably sufficient extent, and the conclusions would seem warranted that overcrowding is in a large measure responsible for the development of the spread of the disease, and the mortality in such institutions in the absence of rational sanitary precautions, is, as a general rule, excessive.

30.—The relation of the mortality from consumption to social and economic conditions, especially to wealth and poverty, habits, such as alcoholism, etc., has been sufficiently inquired into to warrant the conclusion that consumption is much more common among the poor than among the rich, and this may be attributed to imperfect or unsatisfactory diet. The mortality from consumption is also known to be more excessive among persons of intemperate habits, and this is proven by the high death rate of saloonkeepers and bartenders from tubercular diseases.

31.—The relation of the mortality from consumption to religious confession has been investigated, especially by Korosi, Dr. Billings and Dr. Fishberg, and the conclusion would seem warranted that the mortality from this disease is extremely low among persons of the Jewish faith. Whether this is the result of the dietary laws of the Hebrews has not yet been sufficiently established. It, however, is reasonably proper to assume that some such a relation exists. The Jews, however, are justly praised for their high order of domestic life, which, as elsewhere pointed out, has a direct relation to the mortality from tuberculosis.

32.—The relation of the mortality from consumption to personal physical condition as determined by anthropometry, especially in the interrelations of height, weight, chest expansion,

respiration, temperature, pulse rate, etc., has not been sufficiently investigated to warrant entirely safe conclusions, but this much may be affirmed, that persons predisposed to consumption are almost invariably persons of inferior physical development, with evidence of imperfect nutrition, resulting in a body weight about ten pounds below the average. This is a field which is fully deserving of some careful inquiry and consideration, for so far the contributions have been very fragmentary and of only limited value.

33.—The earlier belief in the possible heredity of consumption of the child from the parent, or from collateral branches of the family, is one which, in the light of modern research, may be reasonably assumed to have been overestimated, except in so far that there can be no question but that a physical constitution predisposing to tuberculosis is often, and perhaps frequently, transmitted from parent to child. On this phase of the problem we have also need of additional data covering a large area of observation to eliminate the possibility of erroneous interpretation of the facts.

34.—The duration of the disease from the time of infection to the time of death is usually given as two years or thereabouts, but on this point statistical information is required which would certainly be of great value. No definite law at the present time is known to me which would warrant final conclusions regarding this point.

35.—Relative to the organs affected by tuberculosis, I have already pointed out that of the normal mortality about 96.5 per cent. is represented by consumption of the lungs. It would be desirable, however, to have a comprehensive study made of this aspect of the problem.

36.—The result of treatment in hospitals and sanatoria, with strict regard to the duration of the disease and the race, sex and occupation of the patient, have not as yet been determined with sufficient accuracy, but for a few institutions we have quite trustworthy data which are certain to be of great value in the future. The earlier experience has been materially modified in late years, and it is probably safe to say that three months is the lowest limit of effective sanatoria treatment. It may not be out of place for me to refer to the admirable statistics published annually in the reports of the Johns Hopkins Hospital, in a measure the most useful and practical which are available for any hospital in this country.

CONCLUSIONS.

My object in presenting for your consideration the general statistical laws of tuberculosis is to emphasize the need of a broad basis of sound knowledge for any far-reaching sanitary or other measures which may be adopted for the purpose of diminishing by associated effort the largely preventable amount of disease and mortality from tuberculosis. The facts would seem to warrant the view that it is possible to so localize the mortality from tuberculosis that an energetic campaign against consumption is practically certain to produce far-reaching results. If we determine upon a campaign against consumption as we find it to occur among persons in certain recognized unhealthy employments, or living in certain recognized unhealthy localities, or under certain ill-health-producing conditions, there is no doubt in my mind but that within a few years a marked diminution in the death rate will result from such well-directed and intelligent efforts. By preventing the disease in the first place, it will not be found necessary to erect immense and costly institutions for the cure of the disease. I am certain, from a careful study of the facts in the case, that such efforts should be primarily directed against unsanitary workshops, ill-health-producing occupations and the employment of physically unfit types of men in industries in which the death rate from consumption is extremely high. By adopting intelligent measures in clear recognition of the laws which determine a high or low mortality from this disease I am sure that a large portion of the present mortality from this disease will be done away with.

MORTALITY FROM CONSUMPTION IN FOUR AMERICAN CITIES.

(*Rates per* 10,000 *of Population.*)

| Years. | New York City. | Boston. | Philadelphia. |
|---|---|---|---|
| 1851-1860 | 42.2 | 46.3 | .... |
| 1861-1870 | 38.9 | 40.7 | 32.1 |
| 1871-1880 | 39.3 | 39.9 | 31.7 |
| 1881-1890 | 37.7 | 38.0 | 29.0 |
| 1891-1900 | 26.7 | 26.2 | 22.1 |

| | Baltimore. (White and colored.) |
|---|---|
| 1876-1880 | 36.3 |
| 1881-1885 | 33.8 |

| | |
|---|---|
| 1886-1890 | 28.3 |
| 1891-1895 | 24.3 |
| 1896-1900 | 21.3 |

(Above data compiled from official health reports, supplemented by correspondence with health departments.)

MORTALITY FROM CONSUMPTION BY RACE.

(*Rates per* 10,000 *of Population.*)

Registration Area (Total).

| Years. | Aggregate population. | White population. | Colored population. |
|---|---|---|---|
| 1890 | 24.5 | 23.0 | 54.6 |
| 1900 | 18.7 | 17.4 | 49.1 |

Registration Area (Cities).

| Years. | Aggregate population. | White population. | Colored population. |
|---|---|---|---|
| 1890 | 26.6 | 24.7 | 56.3 |
| 1900 | 20.5 | 18.8 | 50.4 |

Registration Area (Rural).

| Years. | Aggregate population. | White population. | Colored population. |
|---|---|---|---|
| 1890 | 18.1 | 17.8 | 36.5 |
| 1900 | 13.4 | 13.2 | 32.3 |

(Compiled from United States Census of 1900, Vital Statistics, Part I, p. clxxvi.)

MORTALITY FROM CONSUMPTION IN THE REGISTRATION AREA—UNITED STATES.

DEATH RATES BY AGE, COLOR AND BIRTHPLACES OF MOTHERS.

(*Rates per* 10,000 *of Population.*)

| Color and Birthplaces of Mothers. | Ages. Under 15 | Ages. 15-44 | Ages. 45-64 | Ages. 65—over |
|---|---|---|---|---|
| White | 3.2 | 23.5 | 22.1 | 25.2 |
| Colored | 24.6 | 58.7 | 51.8 | 54.9 |
| Mothers born in— | | | | |
| United States | 2.8 | 16.3 | 13.2 | 17.6 |
| Ireland | 4.2 | 42.8 | 34.1 | 32.5 |

| | | | | |
|---|---|---|---|---|
| Germany ..... | 2.7 | 20.6 | 20.8 | 23.5 |
| England and Wales .. | 2.7 | 15.1 | 17.3 | 23.4 |
| Canada ..... | 3.5 | 20.0 | 16.4 | 23.7 |
| Scandinavia ..... | 3.2 | 23.4 | 26.7 | 23.7 |
| Scotland ..... | 3.3 | 20.1 | 20.2 | 23.9 |
| Italy ..... | 5.1 | 15.0 | 15.7 | 14.5 |
| France ..... | 4.7 | 22.1 | 20.0 | 16.3 |
| Hungary ..... | 3.9 | 11.3 | 12.5 | 18.7 |
| Bohemia ..... | 1.3 | 23.5 | 12.5 | 10.1 |
| Russia ..... | 2.7 | 13.1 | 17.3 | 24.9 |
| Poland ..... | 1.1 | 6.7 | 10.4 | 24.3 |
| Other foreign countries | 4.6 | 18.9 | 26.4 | 23.4 |

(Compiled from United States Census of 1900, Vital Statistics, Part I, p. clxxviii.)

## HOUSE INFECTION OF TUBERCULOSIS.*

By LAWRENCE F. FLICK, M.D.,

Director of the Phipps Institute for the Study, Prevention and Cure of Tuberculosis, Philadelphia.

The kaleidoscopic phenomena of this earth as we see them around us are the result of a continuous alternation of life and death. In this beautiful panorama death is as necessary as life. Something is always dying that something else may live. Inorganic matter continuously is being changed into organic matter and organic into inorganic. For changing organic matter into inorganic matter God has created the micro-organic world.

A micro-organism which, perhaps, has slipped away from its natural place in organic nature, and in consequence has done much damage to man, is the tubercle bacillus. In the great division of organic matter it generally is credited to the vegetable kingdom. In a classification of micro-organisms it is technically known as a facultative saprophyte. By this is meant that ordinarily it gets its living as a parasite on some higher organism, but that it may subsist on dead organic matter as a saprophyte. In a sub-classification of micro-organisms it is known as a facultative anaërobic parasite. By this is meant that ordinarily it grows in a tissue from which air is excluded, but that it may

*Read at the Maryland Tuberculosis Exposition, January 26, 1904. From Maryland Medical Journal, February, 1904.

grow in some substances, under certain conditions, in the presence of air.

When the tubercle bacillus grows in the tissue of a human being or of an animal it gives rise to a condition which has forcibly arrested the attention of man because of the suffering, sorrow, and misery which accompany it and follow in its wake. In the early history of medicine this condition was named phthisis and consumption. In more recent times it has been divided into two epochs, the earlier being called tuberculosis and the later consumption. In earlier times, too, the condition was viewed by mankind generally as a providential visitation, the punishment for sin, touching not only the immediate offender, but reaching the offspring to the third and fourth generation. Science has demonstrated that it is a mere episode in nature subject to natural laws and absolutely under the control of man's will.

Man is interested in tuberculosis because it is a disease. The same processes and phenomena in other fields of nature give pleasure to man, but here they give discomfort, and are followed by sorrow and misery, because man himself is the field of operation. The word disease means want of ease. Quite naturally, man has given much thought to how to avoid getting tuberculosis and how to get rid of it when it afflicts him. By reason of his superior intelligence man has always been able to control his organic foes so far as visible objects are concerned, but in his fight against the micro-organic world he is confronted with a much more serious problem. Much has been done, however, to throw light upon this newly-discovered enemy, and already it is demonstrated that man need no longer get tuberculosis, and that if he is so unfortunate as to get it, he need not die of it. Unfortunately, the knowledge which makes this new dispensation possible is still in the hands of a few.

All diseases which are caused by micro-organisms are communicable. This is a self-evident proposition. Whatever is living can only come from a parent, and phenomena which are due to the growth and development of living organisms cannot arise except by reason of the growth and development of those organisms. There is a difference, however, in the manner in which parasitic micro-organisms are conveyed from one person to another. Some are conveyed through the instrumentality of insects, some by means of water, and others by contact, direct or indirect. Some parasites have two kinds of hosts, a major and a minor host; some can reproduce themselves outside of a host, and others

always remain dormant when out of the host. Parasites which have two hosts and parasites which can reproduce themselves outside of a host may be conveyed from one person to another over long distances, while parasites which are conveyed by contact can only be conveyed within a limited, circumscribed environment. The yellow fever parasite, for instance, is conveyed through the mosquito, the typhoid fever parasite by water, and the tubercle bacillus by contact.

All diseases which are conveyed by contact are termed contagious. Contagious diseases are not necessarily alike, however. There is a great difference in the intensity of contagion. The acute contagious diseases are much more intensely contagious than the chronic contagious diseases. In principle the contagion of all is the same, but in practice the method differs widely. Smallpox, measles and scarlet fever, for instance, are contagious in exactly the same sense as tuberculosis, so far as the principle is concerned—that is, they are conveyed by contact—but the intensity of the contagion is so much greater with them than with tuberculosis that practical measures for the prevention of the former would in no sense apply to the latter. Smallpox, measles and scarlet fever affect the whole body, and contagion is rapidly given off from the entire body. Tuberculosis is a local disease, and contagion is given off from one or two points only. In smallpox, measles and scarlet fever the matter which carries the microorganisms may be invisible; in tuberculosis it always is gross and easily seen. In smallpox, measles and scarlet fever places and things soon become intensely contaminated; in tuberculosis it takes a long time to produce such a result. Intimate association, therefore, with a person suffering from smallpox, measles and scarlet fever without contracting the disease is impossible, unless the person thus exposed has an immunity from vaccination or previous attack, while intimate association with a consumptive without contracting the disease is quite feasible.

The contagion of tuberculosis, indeed, is of a kind by itself. It differs somewhat from the contagion of every other disease of which we have knowledge. It is so unique that writers have had some difficulty in finding an epithet descriptive of it. This is the reason why many writers object to calling tuberculosis contagious. Some would have us call it communicable, but this term is too generic. Others have suggested the epithet infectious for it, and this does not fit at all, because it has a specific meaning which only applies to such diseases as malaria and yellow fever.

The most striking feature about the communicability of tuberculosis is that it depends almost entirely upon the house. An inclosure of some kind is so necessary for the conveyance of the disease from one person to another that contagion is impracticable without it. It is therefore with good reason that we use the phrase house infection of tuberculosis when we speak of the practical manner in which the disease is spread in a community. The word infection, of course, is used in the broad sense of conveyance, and the word house in the broad sense of an inclosure. The phrase tells pretty nearly the whole story of the communicability of tuberculosis, and covers the entire proceeding from the beginning to the end—garnering the seed, preparing the soil, implantation, rearing the tender plant, nurturing the full-grown shoot, maturing and harvesting.

The house is the granary of the tubercle bacillus outside of its host. Were it not for the house the tubercle bacillus would soon have to perish from the face of the earth. It could not be preserved. Sunlight, air and water are its natural enemies. The water dissolves it out of its cache, and the sunlight and air destroy it. How long tubercular matter may remain vital in the open air has not been definitely determined, but all agree that the time is very short. Even when the bacilli in such matter are not killed they are weakened so that they will not readily take root when planted. In the house, on the contrary, tubercular matter may remain vital for a long time, because it becomes dry and the broken-down tissue serves as a cache for the bacilli. Even when the matter becomes finely pulverized so that the bacilli no longer have so much protection, it remains vital for a long time, because the sun and air cannot get to it.

Ordinarily the tubercle bacillus is dependent upon other microorganisms for its exit from its host. These are the streptococcus and the staphylococcus. They are pus-producing organisms, and are very adept at destroying tissue. When they join forces with the tubercle bacillus they kill and soften the tissue which has been invaded by the tubercle bacillus, and then Nature casts it out. A double purpose is served in this way, the tubercle bacillus is helped out of its host and is given a protective covering toward preservation while out of the host. The broken-down tissue which is thrown out forms the protective covering.

In the transition of the tubercle bacillus from one host to another we have a beautiful illustration of Nature's jealous care of

every form of life. The tubercle bacillus is a motionless, helpless micro-organism, which can grow and reproduce itself only under certain conditions in a definite soil, and which requires during the interim between its exit from one host and its entrance into another special protection, and for admission into a new host special opportunities. These are secured for it indirectly through its toxin and the toxins of its associates. By sensations set up in the nervous system it lures its victim into the very place where exist the best conditions for the preservation of its species and the best opportunities of finding a new host. Consumption is the autumn of tuberculosis, the blossom grown into ripe fruit. When it comes on the victim, by reason of his chilliness, malaise, and general feeling of helplessness, seeks shelter in some inclosure, and is deluded with the idea that the farther he can get away from sunshine and fresh air the better are his chances of recovery. The house thus becomes the harvest field of the ripe tubercle bacillus, and the seed quite naturally falls into the very place which by nature is intended for its granary.

The house also prepares soil for the tubercle bacillus. We have every reason to believe that the bacillus cannot get a foothold in perfectly healthy, normal tissue. It is quite likely, indeed, that primordially the tubercle bacillus was a saprophyte only, and that its function in the world was to change dead organic matter into inorganic matter. It is easy to conceive how gradually it may have evolved into a parasite by growing on tissue which, while not dead, was much debased. At any rate, even at the present time it does not seem to be able to invade tissue until the tissue has been injured in some way, either by malnutrition, by traumatism, or through the agency of some other micro-organism. Malnutrition is one of the most common predisposing causes of tuberculosis.

The physical life of man and animals is a chemical process. There is a combination of certain elements through the instrumentality of a living cell with evolvement of beings endowed with life. Food, air and water are the substances used in the process. In proportion as these substances are at hand in proper quantities the being evolved is a healthy one, and in proportion as any of the substances are deficient or defective the being is an unhealthy one. Of the three substances required in this chemical process air is, perhaps, the most important, and certainly the most necessary. Life may be maintained for some days without food and water, but for a few minutes only without air. The same is true

of health. A person may keep fair health on a stinted supply of food and water for a long time, but soon succumbs to a stinted supply of air. This probably is due to the fact that air plays a double rôle in health. It not only carries in oxygen for chemical purposes, but it carries out poisonous products of chemical action. It is believed by some that rebreathed air produces soil for the tubercle bacillus more through the poisonous products of combustion which are disseminated in the air than by reason of deficiency of oxygen. Probably it does by both. At any rate, housed human beings and animals are very prone to tuberculosis. Deficiency of oxygen certainly leads to malnutrition. Too much food and too little air not only lead to defective metabolism, but throw upon the organs of the body poisonous products which must be gotten rid of to the detriment of the whole system.

Implantation of the tubercle bacillus is greatly facilitated by the house. For implantation prolonged intimate contact with a person, place, or thing which has been intensely contaminated with tubercular matter is necessary. The mere presence of a few tubercular bacilli is not sufficient. Everybody has some resisting power to tuberculosis, and with everyone there is a minimal dose of tubercle bacilli which will give an implantation. No doubt this dose differs with different people, but resisting power of some kind exists to some extent in everyone. Even in inoculation experiments on animals a minimal dose has been found below which injections prove negative. This minimal dose in a sense measures the individual's fighting capacity against the disease. So long as the minimal dose is not reached an implantation cannot take place. Frequent warfare against a dose below the minimal dose increases the resisting power of an individual and raises the minimal dose. With animals the minimal dose which can give an implantation gradually can be increased until almost complete immunity has been established. Experiments upon animals have been made by inoculation. It is quite probable that by the natural mode of entrance of the tubercle bacillus into the system the minimal dose is larger than by inoculation. The natural mode of entrance is by the alimentary canal or the respiratory tract. At both of these ports of entry there is strong opposition to admission. The gastric juice has some germicidal powers, and all along the respiratory tract there are devices for keeping out micro-organisms. Beyond the ports of entry lie the lymphatics and lymphatic glands, and beyond these the phagocytic bodies of the blood, all of which wage war against micro-organisms that

may pass the ports of entry. From what has been done experimentally on animals and from what we have been able to observe clinically on man, we have good reason to believe that the minimal dose of tubercle bacilli necessary for an implantation by the natural mode of entrance is quite large. This is not a mere speculation either. Out of every five people who are intimately exposed to the contagion of tuberculosis for a long period of time under the most favorable conditions for an implantation only one person develops the disease. This shows that implantation is exceedingly difficult even under most favorable circumstances.

An inclosure is the one place in which contamination with tubercular matter can become sufficiently intense to create an environment capable of overcoming the resisting power of man and producing an implantation. It is only in an inclosure that vital tubercular matter can accumulate. In the open air, water, sunlight and air devitalize it nearly as rapidly as it is given off. Tubercular matter ejected in a house, unless immediately devitalized, artificially dries and is distributed about in particles varying in size from big chunks to impalpable dust. In these particles the bacilli are cached and preserved. Gradually all the particles are reduced to dust, either by trituration, oxidation, or the action of saprophytes. This tubercle-laden dust settles on the walls, on furniture, and on everything in the inclosure. In the course of time there is quite an accumulation of vital tubercular matter in such a place, and every time the air is disturbed tubercle-laden dust is set in motion. Here, then, finally is an environment capable of giving an implantation of tuberculosis. Occupancy of such a room means constant inhalation and frequent deglutition of tubercular matter. Tubercle bacilli continuously find their way into the system, and it is only a question of time when more have gained entrance than can be successfully withstood by the guards and disease-fighters of the body. The result is implantation of tuberculosis.

The kind of inclosure which offers the best environment for the implantation of the tubercle bacillus is, first, the home, and second, the workshop. The home is of all places most prolific of new implantations of tuberculosis. It was on this account that in by-gone days tuberculosis earned for itself the reputation of being an inherited disease. Tuberculosis is a family disease. It can most easily be implanted around the hearthstone. It follows the family tree in its distribution, and when it once gets into a family it follows that family in all directions until it either has exter-

minated the family or exhausted the soil, and has made what is left of the family immune. The part of the home in which implantations most frequently take place is the bedroom, and next to the bedroom the dining-room. The bedroom usually is the place where the victim of tuberculosis spends his last weeks or months—a period during which the disease is most intensely contagious. Among the very poor the dining-room often is used as a bunking-place for the stricken one until a day or two before death. Under such circumstances the dining-room becomes very much contaminated and becomes a prolific source of new implantation.

The workshop is a very common means of spreading tuberculosis. By workshop, of course, is meant any inclosure in which one or more people are employed. Tuberculosis is an extremely chronic disease, and usually runs a long course even in its contagious stage before its victim is incapacitated for his usual occupation. Some people work with the contagious stage of tuberculosis for the greater part of a working lifetime, occasionally being thrown out of employment for a few weeks or months on account of an exacerbation, and again returning with as much vigor as before. Unfortunately, habits of men and women in the matter of spitting make it easy for a consumptive to contaminate his immediate environment in a shop, if not the entire shop. One consumptive, perhaps, cannot contaminate a large shop so as to produce an infectious environment of the entire shop, but he can produce an environment around his own stand capable of implanting the disease in one or more of those next to him, and before long he has associates in the task of polluting the shop. In a workshop in which a case of tuberculosis exists careful investigation will reveal the presence of other cases in various stages of the disease. Deaths will occur from such a shop at regular intervals for an indefinite period so long as the shop is permitted to remain contaminated.

Inclosures such as hotels, churches, public halls, places of amusement, and public conveyances, in which people stop for a short time only, are not apt to give rise to many implantations of tuberculosis for two reasons. First, because a consumptive rarely remains in them long enough to produce a contagious environment capable of giving an implantation, and secondly, because healthy people seldom remain in them long enough to get an implantation. There is some danger of contracting the disease in such places for people who are employed in them in the capacity

of cleaners and caretakers, but for the casual visitor practically there is no danger.

Things which have been intensely contaminated by having been used for a long time by a consumptive may give the disease to others when kept or used indoors. In the open air they may be harmless, unless worn upon the person. Contaminated furniture, carpet, and hangings of various kinds, when taken into a perfectly sterile house, may themselves contaminate the house sufficiently to create an environment capable of implanting the disease. The tubercular matter adhering to such articles is distributed about and settles on walls and floors. In the open air, on the other hand, tubercle-laden dust from such articles is apt to be scattered about over such a wide area as to make it impracticable for any one person to get enough of it to give rise to an implantation.

The house nurtures the tubercular growth when an implantation has taken place. Mere implantation of the tubercle bacillus does not necessarily mean a development of a full-fledged tuberculosis. The disease always begins in a very small way, and then attracts practically no attention. The first crop develops and runs through its course, and a second follows perhaps a little larger than the first. This is followed by a third and fourth, each a little larger than the preceding one, and thereafter another larger still, until finally so much tissue has been invaded and destroyed as to make death inevitable. At any time during the progress of the disease prior to the destruction of tissue essential to normal functions of the body the economy has within itself the power of throwing off the disease. Autopsies prove that this often is accomplished by nature unaided by medicine. It probably would be accomplished in all cases were it not for the house.

In the beginning of the tubercular process the tendency to recovery is so great that the slightest aid to nature may turn the tide toward recovery. The process by which recovery takes place probably is healthy metabolism—that is, a perfect change of food into tissue. Implantation has taken place because the individual temporarily has been a little below par as a result of improper food, insufficient air, overwork, dissipation, an attack of some other disease, or some such matter, one or all. Under proper conditions the implantation is rooted up before it can grow into tuberculosis. All that may be needed is a little rest, a little extra food, and a little more fresh air. In some cases recovery might take place if a little rest could be had, even without extra food and

air; in others if better food could be had, even though no rest could be taken and the air supply could not be changed. But in all recovery would almost surely follow a life in the open air, in spite of bad food supply and overwork. Life in the open air enables one to digest coarser food and to do more work without fatigue than is possible indoors. This is probably due to the fact that in the open air the poisonous products of combustion are promptly removed from the system, and thus are prevented from embarrassing the entire organization. To cure tuberculosis we must have perfect metabolism, and this we only can have when enough fresh air is taken into the system night and day to oxidize the food and cleanse the blood. Imperfect metabolism predisposes to tuberculosis by debasing the tissues and making soil for the tubercle bacillus.

House life undoubtedly plays an important rôle throughout the entire course of tuberculosis to its culmination in consumption and death. With every recurring crop of tubercle the organs of the body become more embarrassed, and the economy is less able to carry on the warfare against the disease. When the disease is in the lungs, as it frequently is, the air supply grows less with each destruction of lung tissue. Fortunately, nature has given all air-breathing creatures ample lung capacity, enough and to spare, so that a great deal of lung tissue may be destroyed without interfering with the functions of the body, provided the air supply is right. Under these circumstances other organs, no doubt, supplement the lungs in their functions of elimination. Everything hinges upon an ample supply of fresh air, however. When this is at hand healthy metabolism may be maintained even when the disease is advanced, and through this health may again be reached. Tuberculosis makes its progress because its victim is shut up in a house where he cannot get fresh air. Unfortunately for the poor, an amply supply of fresh air is impossible. Their homes, as well as their workshops, have been constructed on a mistaken idea that whatever shuts out air, heat and cold is conducive to health. The large death rate from consumption really must be ascribed in a great measure to bad ventilation in home and workshop.

The last scene of conflict in tuberculosis between the victim and his foe is the house. Tuberculosis develops into consumption because of the house. This does not mean that people could not get tuberculosis if they lived out of doors, for birds of the air and animals of the field get the disease. Tuberculosis, however, in

itself would seldom prove fatal. Both animals and human beings may go through life with tuberculosis and reach old age without being seriously inconvenienced by it. Lots of animals and people do. Dr. Trudeau has shown by experiments on animals that life in the open air greatly retards the development of tuberculosis and promotes recovery. Rabbits which he inoculated and penned up died, while rabbits which he inoculated and permitted to run at large maintained good health, although they developed tuberculosis. In sanitoria where consumptives are made to live out of doors wonderful improvement sets in, even when the case is incurable. Frequently all the symptoms of consumption disappear, and the patient becomes comfortable even when so much tissue has been destroyed that recovery is physically impossible. In other words, even consumption in the open air loses all its most serious symptoms. The house makes and maintains consumption, and consumption kills.

Consumption may be well termed a house disease. Without the house it cannot exist. It depends upon the house for its implantation, propagation, and for evolution of all its phenomena. The house is the place where the tubercle bacillus lies dormant in wait for its host; it is the place where the new host gets his implantation; it is the place where the tubercular subject gradually becomes a consumptive, and it is the place where the consumptive dies.

In studying the progress of civilization in the light of modern science one is struck with the egregious blunders into which man has been led by his desire for privacy and comfort. He has built his house to keep out his enemies, to protect himself from heat and cold, and to screen himself from the curiosity of his neighbor. He has sought to make his home his castle, but in reality he has made it the place wherein he courts death.

If man desires to free himself from the great white plague, he will have to retrace his steps from some of what he considers advanced points of civilization. He will have to learn, among other things, that fresh air is God's greatest gift on earth, and that whatever shuts out fresh air shuts out health and happiness. In house infection he will find the key to the entire problem of stamping out tuberculosis.

SUMMARY:

1.—Tuberculosis is a disease due to the parasitic growth of a micro-organism on the tissues of a human being or animal. Being due to organic life, it is communicable.

2.—Tuberculosis is contagious. The contagion of tuberculosis is different from the contagion of acute contagious diseases, however. It is slow and can be avoided easily in the presence of a consumptive, while that of acutely contagious diseases is rapid and cannot be avoided in the presence of those who have such diseases.

3.—The contagion of tuberculosis is closely associated with the house. An inclosure of some kind is necessary to make it effective.

4.—The house is the granary of the tubercle bacillus. It is the place in which tuberculous matter is kept vital until the bacillus can find a new host.

5.—Out of doors tubercular matter becomes devitalized in a short time through water, light and air. Enough cannot accumulate in a vital state to create a contagious environment.

6.—Everyone has some resisting power to tuberculosis. Some have more than others. Practically all have sufficient resisting power to withstand occasional exposure to tuberculosis and exposure out of doors.

7.—For an implantation of tuberculosis prolonged intimate exposure and an intensely contagious environment is necessary to overcome resisting power. This is had in the home and the workshop.

8.—The house prepares soil for the tubercle bacillus.

---

DEAD OUT OF DOORS.

High from the ground, and blown upon by air
  Sun-sanctified; caught from corruption's mould,
Girdled by streams amidst the foot-hills fair,
  With wind-chants making music sweet and old,

This red man rests: unto the elements
  He doth return; his soul soars glad and free,
And e'en his body seems, in going hence,
  To cry: "Oh, Grave, where is thy victory!"

—Richard Burton, in the March "Atlantic."

# SOME PROBLEMS OF A GREAT CITY.

ORATION AT THE ANNUAL MEETING OF THE ORLEANS PARISH MEDICAL SOCIETY, NEW ORLEANS, JANUARY 9, 1904.

By the REV. BEVERLY WARNER.

The honor of addressing your society is very sincerely appreciated and the opportunity is one of which I am at the present time especially eager to avail myself. The city in which our lot is cast and where the bulk of our work is done, is trembling on the verge of a larger and more important forward movement along all lines than ever before in its history.

Louisiana's first offering to civilization was the products of her soil. Her second was the handling of these products as raw material through her exchanges and commercial houses. In the third act of this drama of progress our commonwealth is seen transferring the raw material into the finished product within her own limits and out of her own resources. In other words, native industrialism is beginning to supplement our commerce, and to give greater value to our agriculture.

The construction of the great water way across the Isthmus of Panama forces New Orleans to the front rank among the ports of the world. Southwestward the course of empire takes its way.

The city is the great throbbing heart of this larger life. The city, as characterized by a recent writer, with its "crowded, surging, sorrowing, suffering populace; its great teeming multitudes, its burdens of hope and fear; its disappointments and vexations; its weariness, its sins, its loneliness and heartbreaks; its burden of humanity."

It is upon this phase of the great city life, and concerning some of the desperate problems it presents, that I venture to address you this evening.

There is no body of men who have such expert knowledge as you possess of the "seamy side," so called, of the city's life.

Special knowledge like special talent involves responsibility. It may not always be possible for those who possess such knowledge to put it to practical account themselves, but then it becomes their duty to place it at the disposal of those who are able to use it for the general good.

Two foes to progress are in full fighting force in this community as in others. Ignorance and a smug conservatism which might be given a harsher title without doing violence to the facts. There is also another element which complicates the problem of the better life of the city. It is that false idea of civic patriotism which considers loyalty in the exploitation of unpleasant truths to be treason to the commonwealth.

Now, the physician's calling lifts him above any possible suspicion of self-interest in the use of the probe; and as he is bound in the course of his professional tasks and toil to become acquainted with the details of these evils which affect the moral and physical well-being of the city, I urge upon him his duty as a citizen to at least cry aloud what he knows.

I beg therefore to recall to you certain conditions with which your organization might deal, or concerning which individually you might assume the office of the old Hebrew prophets to cry aloud and spare not. I speak of those serious conditions which menace the health and tend to sap the morals of a large portion of our population.

There is first the threat of crowded tenements. This may surprise laymen, but it will not surprise you. We call our city the delightful city, a city of gardens, of wide spaces between dwellings, through which and over which sweep fresh breezes. In some parts of the city this is true enough. And in those portions there has arisen an impression that there are no slums in New Orleans. People argue that because houses are not crowded together, there is no crowding. The difference between New York and Chicago and New Orleans is that they build up unto the air, while we sprawl out upon the ground. If there be an advantage on either side, it rests with those who dwell in the upper air over those who live on the damp soil of these latitudes.

During the recent convention of the American Economic Association in this city, certain gentlemen acquainted by personal observation and experience with the slum conditions of Northern and Eastern cities assured me that some of the neighborhoods which they investigated here equaled in unsanitary terror those which existed in the larger centres of population. This is an expert opinion, which upon communicating to physicians of my acquaintance, they responded that they knew it, and in some cases added far more sickening details than had fallen under the eyes of the visitors.

We expect men to crowd together, man being a gregarious

animal. It is an old evil coincident with the building of cities. It has moreover always been recognized to be an evil. A proclamation of Charles I "prohibited the sub-division of any building into tenements . . . and the receiving of more families than one into a single tenement."

Cromwell and Charles II are credited with like prohibitions. The reason given was, in substance, that too great a population could not be assembled in one centre without scarcity of food, and lack of proper care for the poor, the sickly, and the starving.

But if people desire to herd together in droves, rather than dwell apart in families, why should they not be allowed to have their way? As moralists we might argue how far it is permissible to a democracy to allow people to live under conditions which evilly affect only themselves; but as citizens, there is no room for argument. We protect by our laws children and even animals from the cruelty or neglect of those who have legal authority over them. We do this in the interest of the State, which, for its own weal must preserve its citizenship from becoming weakling and inefficient. In the same interest we declare that when men herd to the detriment of themselves and others, the whole being of society is affected, and society has the right both of protest and of regulation.

With the overcrowding of our tenements arise noisome and unsanitary modes of living. I am credibly informed by those whose eyes have beheld what they describe that in some crowded portions of this city the lack of a proper disposition of fecal matter is a constant breeder of disease.

The surgeon and physician are forced to fight not only the wounds and ills of humanity running their normal course, but both visible and invisible enemies to health and restoration which inhere in the filthy environments of the very poor.

Moses brought to bear the mandates of religion to preserve hygienic conditions. Moses may or may not be your prophet, but the religion of humanity claims you as her priest, and in the forefront of your law must be this sentence, "Thou shalt, O man, be clean, not only to be worthy of, but to preserve the sacred dower of human life."

The physician has handicap enough in the ignorance and perverseness of his patients. He has the right to demand that society should not set the broad seal of approval upon this ignorance and perverseness, by declining the responsibility of that age-old law of human intercourse, "we are our brother's keeper."

The coming of the trained nurse has been of great advantage in the improvement of certain conditions. But the masses who most need this superb addition to the staff of modern organized helpfulness are unable for lack of money to avail themselves of it.

One of the problems of the great growing city, spotted with festering heaps of impotent wretchedness, is that of bringing together this trained ministry and those who need their ministration.

And this without the taint of pauperization.

One tendency of our civilization, with all its material possessions, and abounding in the rude vigor of power to do, is to overdo. I am not sure but that we have overdone in the matter of charitable organizations and institutions. We have many organizations, and too little organization.

I am afraid we have taken it too much for granted that the chief task of charitable administration is cure, rather than the more difficult but surely more rational one of prevention.

We need a philanthropic serum injected in the social body to obviate the necessity of free clinics for the million, and hospitals for the cure of preventable disease.

Apropos of which, you will not accuse me of trespassing too far upon your own preserves, if I note two curious things in connection with the modern hospitals, or rather with the view taken of them by the lay public.

First, is a real and genuine fear of the hospital and its treatment on the part of many poor and suffering people. They dread to put themselves in your hands, gentlemen, beyonds the walls of their own homes. There is an absurd side to this and a pathetic one. Superstition has something to do with it, ignorance, misinformation—all crystallizing into a not uncommon sentiment that hospital patients are used to experiment upon. Time, patience, spelled with a c, experience, will gradually overcome this. Meanwhile it should be the duty and the high privilege of those who, like myself, have almost daily opportunity of watching the physician bending over the sick-bed of the humblest and poorest, to bear our testimony to his most loyal services in his most holy calling, irrespective of the poverty or wealth, the race or condition, of his patient.

Not excepting my own profession, where we expect to find unselfish service, there is no work done in this world, in my judgment, with such absolute faithfulness, with such indomitable per-

severance, and amidst the most difficult conditions, with such beautiful optimism, as the work of the average surgeon and physician to the bodies of men. Above most men, he must be a man of honor, for the secrets of many hearts, as well as bodies, are bare to his gaze. He must be a man of sympathetic feeling, for he deals with the human at his very worst, tortured by pain, and heavy-souled at the prospect of grappling with the mystery of death.

For twenty-five years I have met him among all sorts and conditions of men, carrying on his often hopeless struggle, but always with hope in his soul. For twenty-five years it has been my fortune to find him almost invariably as I have described him, with exceptions so rare as to sink into insignificance.

The other curious attitude of the public towards the free hospital is the ungenerous use of its facilities by those who are able to pay for their treatment. This is more than mere selfishness; it is an overt wrong, both against the sick poor, who are thus deprived of their rights, and against the profession, without whose free and voluntary labor hospitals would be impossible for the really needy, and misery suffering would be vastly increased.

But this is a digression.

The other vital problem concerning which the voice of the medical profession should be raised is that of the employment of children of tender age in mills and factories. With the growing industrialism of the South follows the engagement of children for the meagre wage that could not be offered to men and women, at an age when such use of their bodies becomes a menace to manhood and womanhood.

It is not with the employer of such labor that the blame wholly lies. Parents coin tainted silver from the blood and tears of their own offspring. Falsehood, cunning, and deceit are their environment as the results of legislation that would save them to a better man and womanhood, under the pressure of the parental greed or imagined necessity.

The physician knows, as no one else, the moral and physical effect of the confining labor in factories upon the young, not only in the stunting and arresting of their youth, but in the sapping of their manhood and vigor.

> "They know the grief of man without its wisdom;
> They sink in man's despair without its calm."

I urge you who see the travail of the childish souls to voice their childish wrongs.

Those who take upon themselves these tasks: the obstinacy of vested interests, the opposition of the ignorant, the dislike of that complacent citizenship which prefers the dishonorable peace of acquiescence to the knightly tumult of revolt.

I remember, not so long ago, how one summer physicians were roughly blamed for not reporting cases of an infectious disease, and the next summer every pressure was brought to bear upon them by reputable citizens to force them not to report them. The business interests of the city, it was claimed, were at stake.

My friends, publicity is the most potent factor in the process of reformation. If this city, or any part of this city, nurses conditions which are a menace and a threat to the public welfare, I believe it is the solemn duty of those under whose observation these evils fall to invite the name of traitors, by loyalty to a deeper than the surface truth.

I do not depreciate the efforts that are made. I acknowledge the painful lack of money in the public chest to accomplish more for the better sanitary conditions. I admit the low death rate at certain seasons of the year, compared with other cities of like size. But I protest that a city than can so graciously entertain the world, at such large cost every year, should be summoned to consider whether, having done that, there are not other things of at least equal importance which should not be left undone.

We should have a tenement house commission at least to regulate the building, remodeling and occupancy of dwellings, where the very poor have no choice but to live. Will you ask for it?

The time will come when in New Orleans, as elsewhere, men and women will be inspired to give their wealth for the prevention of misery and wretchedness, as they now give generously for their amelioration.

We are seeing the beginnings of it. It will come, that happy day, when men will know what they deny or doubt, or fear to have brought to their notice.

You, gentlemen, are busy and hard-worked men, but can speak with unquestioned authority, and with motives that cannot be impugned, concerning these problems which increase with population and multiply with the expanding industrialism to which we point with pride.

You must be staggered often under your consciousness of the burden of humanity.

See, through the rocks of the world
Marches the host of mankind,
A feeble wavering line.
Where are they tending? a God
Marshaled them, gave them their goal.
Ah! but the way is so long!
Years they have been in the wild!
Sore thirst plagues them, the rocks
Rising all round, overawe;
Factions divide them, their host
Threatens to break, to dissolve.
Ah! keep, keep them combined
Else of the myriads who fill
That army, not one shall arrive.
Sole they shall stray; in the rocks
Stagger forever in vain;
Die, one by one, in the waste.

But I know of no organized body of men so competent as this, speaking from their first hand knowledge, without rhetoric, without bombast, to arouse the civic conscience to a civic consciousness of duty. For

Languor is not in your heart,
Weakness is not in your word,
Weariness not on your brow.
Ye alight in our van, at your voice
Panic, despair flee away.
Ye move through the ranks, recall
The stragglers, refresh the outworn,
Praise, reinspire the brave!
Order, courage, return,
Eyes rekindling, and prayers
Follow your steps as ye go.
Ye fill up the gaps in our files
Strengthen the wavering line.
'Stablish, continue our march.
On to the bound of the waste,
On to the city of God.

—From New Orleans "Medical and Surgical Journal," March, 1904.

# BILL FOR PREVENTING THE ADULTERATION OR MISBRANDING OF FOODS OR DRUGS.*

*Be it enacted, etc.,* That the introduction into any State or Territory or the District of Columbia from any other State or Territory or the District of Columbia, or from any foreign country, or shipment to any foreign country of any article of food or drugs which is adulterated or misbranded within the meaning of this act is hereby prohibited; and any person who shall ship or deliver for shipment from any State or Territory or the District of Columbia to any other State or Territory or the District of Columbia, or to a foreign country, or who shall receive in any State or Territory or the District of Columbia from any other State or Territory or the District of Columbia or foreign country, or who, having received, shall deliver in original unbroken packages for pay or otherwise, or offer to deliver to any other person any such article so adulterated or misbranded within the meaning of this act, or any person who shall sell or offer for sale in the District of Columbia or the Territories of the United States such adulterated or misbranded foods or drugs, or who shall export or offer to export the same to any foreign country shall be guilty of a misdemeanor, and for such offence be fined not exceeding two hundred dollars for the first offence, and for each subsequent offence not exceeding three hundred dollars, or be imprisoned not exceeding one year, or both, in the discretion of the court.

SEC. 2.—That the Chief of the Bureau of Chemistry in the Department of Agriculture shall make or cause to be made, under rules and regulations to be prescribed by the Secretary of Agriculture, examinations of specimens of foods and drugs offered for sale in original unbroken packages in the District of Columbia, in any Territory, or in any State other than that in which they shall have been respectively manufacturered or produced, or from any foreign country, or intended for shipment to any foreign country, which may be collected from time to time in various parts of the country. If it shall appear from any such examination that

*"Bill (S. 198) for preventing the adulteration, misbranding, and imitation of foods, beverages, candies, drugs, and condiments in the District of Columbia and the Territories, and for regulating interstate traffic therein, and for other purposes, and the bill (H. R. 6295) for preventing the adulteration or misbranding of foods or drugs, and for regulating traffic therein, and for other purposes."—Passed the House of Representatives January 19, 1904, and is at the time of this writing in the Senate.

any of the provisions of this Act have been violated, the Secretary of Agriculture shall at once certify the facts to the proper United States Dictrict-Attorney, with a copy of the results of the analyses, duly authenticated by the analyst under oath.

SEC. 3.—That it shall be the duty of every district-attorney to whom the Secretary of Agriculture shall report any violation of this Act to cause proceedings to be commenced and prosecuted without delay for the fines and penalties in such case provided.

DEFINITIONS.

SEC. 4.—That the term "drug," as used in this Act, shall include all medicines and preparations recognized in the United States Pharmacopœia for internal and external use; also any substance intended to be used for the cure, mitigation, or prevention of disease. The term "food," as used herein, shall include all articles used for food, drink, confectionery, or condiment by man or domestic animals, whether simple, mixed, or compound.

ADULTERATIONS AND MISBRANDING.

SEC. 5.—That for the purposes of this Act an article shall be deemed to be adulterated—

In case of drugs:

First. If, when a drug is sold under or by a name recognized in the United States Pharmacopœia, it differs from the standard of strength, quality, or purity as determined by the test laid down in the United States Pharmacopœia official at the time of the investigation: *Provided*, That no drug shall be deemed to be adulterated under this provision if the standard of strength, quality, or purity be plainly stated upon the bottle, box, or other container thereof, although such standard may differ from that determined by the test laid down in the United States Pharmacopœia.

Second. If its strength or purity fall below the professed standard under which it is sold.

That such drug shall be deemed to be misbranded:

First. If it be an imitation of or offered for sale under the name of another article.

Second. If the package containing it or its label shall bear any statement regarding the ingredients or the substances contained therein, which statement shall be false or misleading in any particular, or if the same is falsely branded as to the State or Territory in which it is manufactured or produced.

In the case of confectionery an article shall be deemed to be adulterated:

If it contains terra alba, barytes, talc, chrome yellow, or other mineral substances or poisonous colors or flavors, or other ingredients deleterious or detrimental to health.

In the case of food an article shall be deemed to be adulterated:

First. If any substance or substances has or have been mixed and packed with it so as to reduce or lower or injuriously affect its quality or strength, so that such product, when offered for sale, shall deceive or tend to deceive the purchaser.

Second. If any substance or substances has or have been substituted wholly or in part for the article, so that the product, when sold or offered for sale, shall deceive or tend to deceive the purchaser.

Third. If any valuable constituent of the article has been wholly or in part abstracted, so that the product, when sold or offered for sale, shall deceive or tend to deceive the purchaser.

Fourth. If it contain any added poisonous ingredient or any ingredient which may render such article injurious to the health of the person consuming it.

Fifth. If it consists in whole or in part of a filthy, decomposed, or putrid animal or vegetable substance, or any portion of an animal unfit for food, whether manufactured or not, or if it is the product of a diseased animal, or one that has died otherwise than by slaughter.

An article of food shall be deemed to be misbranded:

First. If it be an imitation of or offered for sale under the distinctive name of another article: *Provided,* That the term "distinctive name" shall not be construed as applying to any article sold or offered for sale under a name that has come into general use to indicate the class or kind of the article if the name be accompanied on the same label or brand with a statement of the place where said article has been manufactured or produced.

Second. If it be mixed, colored, powdered, or stained in a manner whereby damage or inferiority is concealed, so that such product, when sold or offered for sale, shall deceive or tend to deceive the purchaser.

Third. If it be labeled or branded with intent so as to deceive or mislead the purchaser, or purport to be a foreign product when not so, or is an imitation, either in package or label, of another substance of a previously established name, or which has been trade-marked or patented.

Fourth. If the package containing it or its label shall bear any statement regarding the ingredients or the substances contained therein, which statement shall be false or misleading in any particular, or if the same is falsely branded as to the State or Territory in which it is manufactured or produced: *Provided*, That an article of food which does not contain any added poisonous or deleterious ingredients shall not be deemed to be adulterated or misbranded in the following cases:

**First.** In the case of mixtures or compounds which may be now or from time to time hereafter known as articles of food, under their own distinctive names, and not included in definition first of misbranded articles of food in this section.

Second. In the case of articles labeled, branded, or tagged so as to plainly indicate that they are mixtures, compounds, combinations, imitations, or blends: *Provided*, That the same shall be labeled, branded, or tagged so as to show the character and constituents thereof: *And provided further*, That nothing in this Act shall be construed as requiring or compelling proprietors or manufacturers of proprietary foods which contain no unwholesome added ingredients to disclose their trade formulas, except in so far as the provisions of this Act may require to secure freedom from adulteration or imitation: *Provided further*, That no dealer shall be convicted under the provisions of this Act when he can establish a guaranty signed by the wholesaler, jobber, manufacturer, or other party from whom he purchases such articles to the effect that the same is not adulterated or misbranded within the meaning of this Act, designating it, and providing further, always, that said guarantor or guarantors reside in the United States. Said guaranty, to afford protection, shall contain the name and address of the party or parties making the sale of such article to such dealer, and said party or parties shall be amenable to the prosecutions, fines, and other penalties which would attach, in due course, to the dealer under the provisions of this Act.

SEC. 6. That every person who manufactures or produces for shipment and delivers for transportation within the District of Columbia or any Territory, or who manufactures or produces for shipment or delivers for transportation from any State, Territory, or the District of Columbia to any other State, Territory, or the District of Columbia, or to any foreign country, any drug or article of food, and every person who exposes for sale or delivers to a purchaser in the District of Columbia or any Territory any

drug or article of food manufactured or produced within said District of Columbia or any Territory, or who exposes for sale or delivers for shipment any drug or article of food received from a State, Territory, or the District of Columbia other than the State, Territory, or the District of Columbia in which he exposes for sale or delivers such drug or article of food, or from any foreign country, shall furnish within business hours, and upon tender and full payment of the selling price, a sample of such drugs or articles of food to any person duly authorized by the Secretary of Agriculture to receive the same and who shall apply to such manufacturer, producer, or vender, or person delivering to a purchaser such drug or article of food, for such sample for such use, in sufficient quantity for the analysis of any such article or articles in his possession.

SEC. 7.—That any manufacturer, producer, or dealer who refuses to comply, upon demand, with the requirements of section eight of this Act shall be guilty of a misdemeanor, and upon conviction shall be fined not exceeding one hundred dollars or imprisonment not exceeding one hundred days, or both. And any person found guilty of manufacturing or offering for sale, or selling, any adulterated, impure, or misbranded article of food or drug in violation of the provisions of this Act shall be adjudged to pay, in addition to the penalties hereinbefore provided for, all the necessary costs and expenses incurred in inspecting and analyzing such adulterated articles which said person may have been found guilty of manufacturing, selling, or offering for sale.

SEC. 8.—That any article of food or drug that is adulterated or misbranded within the meaning of this Act, and is transported or being transported from one State to another for sale, or if it be sold or offered for sale in the District of Columbia and the Territories of the United States, or if it be imported from a foreign country for sale, or if intended for export to a foreign country, shall be liable to be proceeded against in any district court of the United States, within the district where the same is found and seized for confiscation, by a process of libel for condemnation. And if such article is condemned as being adulterated the same shall be disposed of as the said court may direct, and the proceeds thereof, if sold, less the legal costs and charges, shall be paid into the Treasury of the United States, but such goods shall not be sold in any State contrary to the laws of that State. The proceedings of such libel cases shall conform, as near as may be, to proceedings in admiralty, except that either party may demand

trial by jury of any issue of fact joined in such case; and all such proceedings shall be at the suit of and in the name of the United States.

SEC. 9.—That this Act shall not be construed to interfere with commerce wholly internal in any State, nor with the exercise of their police powers by the several States: *Provided further*, That nothing in this Act shall be construed to interfere with legislation now in force, enacted either by Congress for the District of Columbia or by the Territorial legislatures for the several Territories, regulating commerce in adulterated foods and drugs within the District of Columbia and the several Territories, except wherein such legislation conflicts with the provisions herein.

SEC. 10.—That this Act shall take effect and be in force from and after the first day of January, nineteen hundred and five.

---

## THE OLD TIME PIECES, AND HOW I TAKE CARE OF THEM.

You are right, my dear young house-wife, it is much easier to care for old silver pieces than old mahogany pieces. They are the most trouble of all such relics, is my experience.

I will tell you an excellent method of caring for your valuable old sideboard and dining-table; for unless they are cared for properly they will soon lose all their look of grandeur.

I have had considerable experience with such pieces, and it is the most difficult of all I ever cleaned; yet with patience and care it can be kept perfectly.

Your dining-table and sideboard should be wiped off every day until they reflect like a mirror. If an ink-stain gets on your table, remove it with a few drops of spirits of niter in a spoonful of warm water. Put one drop on the ink, and rub at once with a soft woolen cloth; not with water, or it will make a white spot. You should not let any one write on such a table.

Wipe your dining-table with a clean flannel dipped in a warm (not hot) suds made of rain water-and pearline, and then with a thick flannel wad pour melted wax until it forms a glazed surface when cold, and rub the table hard, following the grain of wood, until you can see your face in it. All of your mahogany pieces can be cleaned beautifully this way.—S. H., in "The Living Church."

## MEDICAL EXCERPT.

By T. P. Corbally, A.M., M.D.

The Cure of Biliary Lithiasis by Chologene.—The following notice of a most important subject by Dr. Gaudin appeared in the "Progrès Médical" of March 3d, who says, under the title "Thérapeutique":

"According to theories now popular on the subject of pathology it is believed that everything has been explained when 'infection' was given to the profession. Biliary lithiasis has not escaped this interpretation; according to the new doctrine biliary lithiasis is due to an infection having its origin in the intestines. The rational therapeutic treatment in the case would then be to disinfect the intestines and the biliary tracts by proper remedies, as the Carlsbad water, or by purgatives, as calomel, and if that is not sufficient, by operation."

Dr. Glaser, de Muri, has remarked very justly that the pathogenic relations arising from disturbances in the nervous system have been quite too much neglected. He has formulated a new treatment for hepatic colics, based on the following theory:

Normal bile is sterile. It is a product of secretion submitted to the influence of the nervous system, as are all the secretions. Normal bile, yellow, limpid, sterile, ought to contain all the elements in normal proportions. It is not so secreted by the liver except when the pneumo-gastric and the sympathetic excite the parenchyma of the liver under normal conditions. The proper proportion of the cholesteric salts and the cholesterine are important, and should be maintained. As soon as the proper proportion of the acids of the bile and the cholesterine in their proportions, the bile becomes irritating to the liver; it becomes subject to infection, or it infects the biliary conduits. However short the time it may remain stagnant in the liver, a condition that happens usually in the night, it will depose a large quantity of cholesterine in excess of health, and crystals are formed, usually around a centre of epithelial cells in process of elimination. The bile thus changed will offer less resistance than the normal bile to the infection that may enter through the duodenum. This infection may have, as a consequence, a decomposition of the bile, and may also form a deposit of cholesterine. When the biliary

calculi are formed they act like all other foreign bodies by provoking irritation of the catarrhal surfaces of the biliary passages, and if there is a possibility, an infection of some kind will result.

The most important question is then, first to influence the nerves of secretion of the liver so as to restore it to its healthy action, and thus to render the bile secretæ natural and healthy. A perfect remedy ought to restore the normal and healthy condition of the elements of the bile without, however, making it too thick.

It will be necessary also that this medicine pass into the bile itself, in order to have the power to exert an antiseptic effect; its action must be anti-catarrhal on the lining of the vessels. And more, this medicine must cause local hyperesthesia to disappear and calm the irritation and contractions of the vesicle, overcome habitual constipation, and do all this without producing any injurious effect, even if the remedy has to be employed for an indefinitely long time. But there is no substance, no drug which of itself would produce this multiple action and would agree with all persons.

Dr. Glaser has been led to prepare an organic derivative of mercury, uniting in itself the properties of cathartic agents, as cholagogues and of antispasmodic carminatives: this is an amylo-camphorate of mercury prepared under the form of compresses of three degrees of strength, which he calls chologène No. 1, No. 2, and No. 3. The treatment of biliary lithiasis must continue long enough to ensure success, and that condition should continue to exist even when a marked improvement should be found in a short time. It will be necessary to continue the administration of chologène often during six weeks, and the curative measures should be repeated every year during the spring and autumn.

It was only in very rare cases that Dr. Glaser was obliged to use morphine; a flannel bandage, moistened with oil of poppy and chloroform, was sufficient to calm the attacks when they were beginning.

The following are the principal lines on which treatment with chologène are conducted:

1. The patient must be withdrawn as much as possible from his usual habits and from the cares of business.

2. Exercise in the open air with deep breathing frequently repeated have a very favorable influence on the functions of all the organs, and especially on those associated with the liver. A perfect circulation of the blood throughout the system and deep

breathing stimulate the formation of the bile and its normal secretion.

3. The regimen should be very strict from the beginning of the treatment and continue as long as there is inflammation in the interior organs and around the biliary organs, and especially the liver. Indigested meats must not be used, but it is necessary not to allow the patient to become enfeebled by insufficient diet. A mixed diet is the best. A good mastication and a liberal amount of saliva are the principal things.

4. Baths, especially salt baths, are an important means of enlivening the activity of the hepatic functions.

5. The pains, the dragging sensations caused by adhesions or by other intestinal disturbances, such as dilatations of the stomach, must be treated with appropriate remedies. As far as possible should be spared local treatment, injections, electricity, massage.

In one hundred patients having biliary lithiasis treated with chologène, the present statistics show: Cured, 78 per cent.; improved, 16 per cent.; no results, 6 per cent.

For the use of chologène there are no contraindications whatever. All patients support it well—infants and the aged, those with heart disease, and women enceinte. In cases of catarrh of the large intestine the tablets of chologène may cause some griping pains without, however, increasing the catarrhal symptoms and without losing any of their curative value. Chologène may be prescribed from the moment that lithiasis has been diagnosed. It may also be used in doubtful cases or in those in which one may have to deal with critical nervous diseases of the stomach. The treatment will always be efficacious if it is well directed, if there be no empyema—no purulent infection of the biliary vessels, if there be no extensive adhesions, no malignant tumors.

This is followed by a series of interesting cases by the author, for which room cannot be spared.

CHLORIDE OF SODIUM IN GASTRIC DIGESTION.—Linassier presented a report to the Société de Biologie on the action of chloride of sodium on gastric digestion in dyspeptics ("Progrès Médical," Jan. 30, 1904). The effect of the ingestion of sea salt is first to diminish the hydrochloric acidity of the gastric contents. Reichmann has formally established this in man. The chlorurisation of the organism augments the secretion of hydrochloric acid in

the dog; in man it is hypohydrochloric. The suppression of the alimentary chlorides may lead to the arrest of all gastric secretion. In the hyperhydrochloric the limitation of the alimentary chlorides produce in the general secretion only modifications of little importance. The same results might be obtained by a hyperhydrochlorurisation intense and protracted.

The chloride of sodium retards the pepsic digestion of albumen 0.3 pour 100 de sel act on the gastric contents as much as 40 or 50 per 100 of pepsine. The normal dose after an ordinary meal is an obstacle to digestion. So with the hypo-hydrochlorics, if there is occasion to add the salt, it ought to be introduced before the meal and in the form of an injection.

DENSITY OF THE BLOOD DURING THE LAST MONTHS OF PREGNANCY.—MM. P. Bar and Daunay have studied the cases of (5) five women in the last months of pregnancy whose health was good throughout; they also followed the cases of these same women for many months after their confinement. This was done by puncture of the cephalic vein, and the density was determined by means of a pipette of their own construction. The density of the blood was in all the cases diminished at the end of pregnancy. It was on average 1051, and speedily raised in women who did not nurse. It was much lower in rising, and always less in quantity in nurses, and generally a marked and distinct change was observed ten days after nursing was discontinued.

AN EFFICIENT ANTISEPTIC.—The general results of the recent discussion in this paper ("London Daily Chronicle") on the relative value and safety of various antiseptics derive confirmation from a monograph which we have received from the Pasteur Institute of Paris. We described the volatile or essential oils of plants as the safest—and the most pleasant, might have been added—of antiseptics for direct human use; that of eucalyptus holding a very high place. A couple of professorial members of the Association of Analytical Chemists of the Pasteur Institute have been studying listerine, which is named after the great English surgeon. Listerine is a mixture of the essential oils of thyme, eucalyptus, baptisia, wintergreen and mint. It has relatively non-toxic properties peculiar to these oils, but the Parisian savants have brought out the important fact that the mixture of oils is much more potent than any one of them singly. It attacks more than one joint in the bacterial armor. Carbolic acid—used so

much mainly because it is the original antiseptic employed by Lister—is 146 times as toxic as Listerine.

DISPENSARIES FOR DRUNKARDS.—Rybakoff ("Roussky Vratch," Jan. 24, 1904), advocates the establishment of municipal dispensaries for the prevention and treatment of alcoholism. In these establishments hypnotic suggestion should be employed as the principal method of treatment. The first establishment of this kind was founded by the author, in 1896, in connection with the Moscow Psychiatric Clinic, and since then several dispensaries of the same class have been opened in various parts of Russia. Rybakoff thinks that the entire country should be divided into districts, in each of which there should be one or more of these dispensaries.

The organization of these dispensaries should be undertaken by physicians in connection with national and local temperance societies. Such dispensaries should be also established as branches of municipal and rural hospitals. If a sufficient number of these dispensaries is opened, the question as to the establishment of special sanatoria for alcoholics will assume secondary importance. The author does not think that anything can be done with drugs in the treatment of chronic alcoholism, except symptomatically. The modern treatment of alcoholism reduces itself to one of two measures: Either the isolation of alcoholics in special sanatoria, or the systematic employment of hypnotism in ambulant cases.—"New York Medical Journal," April 2.

CARBURETED AIR LIGHT.—Dr. Hugh Marshall, Fellow of the Royal Society of Edinburgh, lecturer on chemistry in the University of Edinburgh, has invented another method of using carbureted air for lighting. It is an improvement upon the form of lamp devised by M. Naum Notkin, of Moscow, in which carbureted air was obtained by employing paper pulp saturated with gasoline to produce the vapor required. In this Notkin "gravity" lamp the carbureted air, being denser than air itself, flowed from a higher to a lower level, instead of ascending like coal gas, and could therefore be poured from one vessel to another, like a liquid. In the Marshall lamp the necessary current of air through the carbureter is not maintained by the effect of gravity, but by means of the draft from the lamp chimney. It is thus possible to have the body of the lamp below the actual burner. To reduce the manipulation necessary with such a lamp when used for incandescent lighting, Doctor Marshall has invented a form of burner

tube, which is sunk axially into the body of the containing vessel, and which enables the user to regulate the mixture of vapor and air to a nicety by simply rotating the tube in one direction or the other. The new method of using carbureted air has been applied by Doctor Marshall to various types of lamps—table and portable, hanging, basket, and also in lantern form for outdoor lighting. These show a brilliant incandescent light, without any liquid or wicks being used, and are free from smell or smoke. Doctor Marshall claims also that carbureted air can be supplied all over a house without danger or complicated processes, and that the gas can be applied to other purposes than lighting, such as for heating and motive power.—Rufus Fleming, Consul, Edinburgh, Scotland, November 25, 1903.

POPULAR REMEDIES FOR DRUNKENNESS IN RUSSIA.—Demitch ("Roussky Vratch," Jan. 24, 1904) reviews the various methods which the Russian people employ in dealing with drunkenness. A variety of empirical and superstitious remedies are employed, for the most part substances which are so disgusting that they excite nausea and vomiting. A number of plants distinguished by their bitter taste, strong odor, and sometimes poisonous properties, have been used by the people in "curing" drunkards. Most of them are of no value but do a great deal of harm. As regards the methods of bringing a drunken man to consciousness, which are still in vogue in the rural districts of Russia, they are evidences of inhumanity which characterizes a low state of civilization. The idea of these methods is that a drunkard must be brought to his senses, no matter at what cost, and thus be cured of his pernicious habit. In one place the peasants cover the scrotum and perinæum with tar, and the resulting headache, lasting for a day or two, is supposed to "sober him up." In another town, ammonia is given to inhale, or the juice of fresh horses' fæces is given to drink. In the Tchernigoff province there is a tradition that a drunkard must be brought to by pouring fresh human urine into his mouth. In the Krasnoslobodsk district the peasants use a mixture of hens' excrement and woman's urine, and in Kaluga, Orloff, etc., they give drunkards the juice of horse manure. In another place they wash the head with hot water, or rub the ears with snow until they are terribly deformed. Other inhuman methods are used also, such as whipping with leather straps, throwing into the air upon blankets, holding by the feet with the head down, tearing out the hair or beard, etc., the

drunkard being passed from hand to hand with a view of "not allowing him to sleep." In one case a man was boiled to death by pouring a quantity of boiling water upon his naked body.—"New York Medical Journal," April 2.

## RECENT SANITARY PATENTS.

746421.—Apparatus for Destroying Refuse; George Watson, Leeds, England.

746731.—Formaldehyde Fumigator; Seth M. Morris, Galveston, Tex.

746949.—Cesspool; Howard D. Gardner, New York, N. Y.

749453.—Attaching Device for Sanitary Napkins, Charles H. Schopbach, Aurora, Ill.

749963.—Apparatus for Applying Disinfectants to Water Closets; George S. Gallagher, New York, N. Y.

750347.—Apparatus for Disinfecting Paper Money; Charles B. Clark, Buffalo, N. Y.

750474.—Water Purification; Cleophas Monjeau, Middletown, Ohio.

750568.—Massage Implement; James Barker, Philadelphia, Pa.

750735.—Implement for Mechanical Vibratory Treatment; Fenton B. Turck, Chicago, Ill.

751266.—Pocket Spittoon; Joseph M. A. Deydier, Lyons, France.

752114.—Breath Guard; Leonidas Sennett and Abraham L Moore, Russell, Ky.

752657.—Fumigator; William B. Cunningham, Houston, Tex.

753968.—Device for Applying Liquids to the Scalp; Arthur J. Farmer, Detroit, Mich.

754463.—Massage Machine; Philip J. Kroll, New York, N. Y.

754890.—Device for Removing Garbage; Emil O. Poppe, Kirchberg, Germany.

754925.—Massage Device; Ottoman Zar-Adusht-Hanish, Chicago, Ill.

754992.—Exercising Apparatus; Charles A. Grabner, Warsaw, Ind.

755547.—Combined Body Brace and Corset; Howard C. Rash, Celina, Kansas.

# EDITOR'S TABLE.

SANITARIAN, MAY, 1904.

**All Communications, business and otherwise, all exchanges and all publications for review should be addressed to the Editor, Dr. A. N. Bell, 337 Clinton Street, Brooklyn, N. Y.**

## CHILD-SAVING LAWS SUSTAINED.

An opinion sustaining the New York law will keenly interest those who have been promoting child-labor campaigns in other States.

JUDGE ROESCH, of the Fourth District Municipal Court, New York City, handed down on March 24th a decision in what is considered the most important case so far brought into the courts as result of the efforts that the Child-labor Committee is now making to secure a thorough enforcement of the child-labor and compulsory education laws which were passed by the New York Legislature last winter, and which put New York in the forefront of child-protecting States.

The constitutionality of the law is upheld and the judge makes a ruling which, if sustained, will practically put an end to the usefulness of perjured affidavits which in years past have been notoriously common in procuring the employment of children too young to be allowed to work.

The case was an action brought by the City of New York against the Chelsea Jute Mills, a large Brooklyn corporation employing many women and children, to recover a penalty of fifty dollars for a violation of the compulsory education law. This law, which was substantially amended as a part of the Child-labor Committee's work of last year, provides that an employer who employs a child under fourteen years of age during any part of the term in which schools of the district in which the child resides are in session shall be subject to a penalty of fifty dollars, recoverable by the city. The Chelsea Jute Mills employed a little Italian girl, eleven years old, named Annie Ventre, in emptying bobbins. When she was first employed, being then eleven years of age, she produced an affidavit by her father that she was sixteen years old. On trial the City of New York was represented by Assistant Corporation Counsel John C. Breckenridge; the Child-labor

Committee, whose investigations and evidence caused the suit to be brought, being represented by George W. Alger, who appeared by permission of court as counsel for the committee, and who submitted a brief of the law. The defendant, through Carter, Ledyard & Milburn, strenuously claimed not only that the compulsory education law was unconstitutional, but that the Chelsea Jute Mills, having acted in good faith and having relied upon the affidavit of the parent that Annie Ventre was sixteen, could not be punished for employing her. Their counsel insisted that the mills could not be punished unless it was shown that they knew the child's real age and intentionally violated the law.

Judge Roesch overrules this contention, holding that an employer who employs a child under fourteen years of age does so at his peril and cannot successfully plead that he does not know the child to be under the legal age.

"Nor is the good faith of defendant, or absence of intent, an excuse. The defendant was not active in its quest after the age of the child. It was passive. It complacently received the affidavit of the father upon that point. The forewoman testified that she made no other inquiries, but rested entirely upon the affidavit, and the statement of the girl that she was 'sixteen passed.' She was in court.

"To the most casual observer the very appearance of the child refuted her statement. When she made it she was but eleven years nine months old, and her daily toil dragged through ten and one-half hours. She showed the effects in her mal-development and stunted growth. She was a living picture of the result of child labor in a factory at a delicate age when womanhood and manhood are in a stage of development."

If this decision is sustained the use of these perjured affidavits which have in years past afforded so common a means to unscrupulous employers for evading the child-labor laws, will lose their value. Judge Roesch, in support of his opinion cites many cases sustaining his view that the company's alleged ignorance of the child's actual age is no defence; among them, a recent case in the Court of Appeals, in which it was held to be no defence in a criminal action against a liquor dealer for selling liquor to a minor, that the sale had been made in good faith after the minor had assured the liquor dealer that he was of age.

Judge Roesch sustains the constitutionality of the law, which was attacked as being "an unwarranted, illegal, and unconstitutional deprivation of the liberties of the defendant." The decision

contains a careful examination of the history of child-labor legislation in New York and elsewhere. Judge Roesch says: "The test with such legislation lies in its answer to the question, Does it serve a public purpose? Does it reach all persons of a reasonably ascertained class indiscriminately? And is it cognate to the objects it proposes to observe?" The justice finds that the present statute does not discriminate, is not arbitrary, and puts no unnecessary restriction on freedom of action, because he says: "It would be impossible, except by an absolute prohibition of employment of all children under fourteen years of age, to accomplish its beneficial ends. Nor does it constitute any improper infringement of any right a parent may have in a child in its labor or a child may have to labor."

The judge concludes that if this law be declared invalid the door will be thrown wide open to the most noxious kinds of child labor, and directs judgment for the plaintiff.

REAL LIFE DRAMA OF THE "TENDERLOIN"—A PATHETIC SCENE.

The New York "Times" of March 25 gives the following description of a little drama enacted in the West Thirtieth Street Police Station the night before:

A few minutes after midnight the door of the police station opened and there entered with a patrolman a young woman and an elderly man, both well dressed and of refined appearance. They were evidently Southerners. The girl was a prisoner.

"What is the trouble?" asked Sergt. Place. The patrolman shrugged his shoulders.

"This man came to me and asked me to step into a cafe at Thirty-first street and Broadway and take charge of this young lady."

Sergt. Place looked inquiringly at the elderly man. There was a long silence. Then the man said to the young woman, who was staring straight in front of her:

"Mary, it isn't too late. Will you come home?"

"No," was the firm reply.

"I am sorry," said the man to the sergeant, "but I must ask you, then, to—take charge of my niece for the night."

The sergeant said nothing; he was evidently anxious to allow the girl time to reconsider. The man turned again to the girl and said, huskily:

"For my brother's—your father's sake—Jim's dead and I'm your guardian—will you not come home?"

"No."

The man nodded to the sergeant and turned away.

"Your name, please?" said Place. The girl gave it, and her age as nineteen.

"The charge?"

"I will explain the situation," said the uncle. "Her father—my brother—is dead. Her mother has married again, and seems to have lost interest in the girl, who has been living with us. Recently she has been staying out late against my will. To-night I saw her enter the café with a young man whom I dislike. She refused to come home with me, and—I felt that—well, that's all."

The girl was placed in the hands of the matron. As the man turned to go, his niece said bitterly:

"You have committed your own niece to prison. Would you have done so had I been your daughter? Good night."

A few minutes later the door opened again and a young man entered.

"What has been done with Miss ———?" he inquired politely.

"Get out of here!" snapped the sergeant. The young man went.

At 1 o'clock the uncle returned.

"I wish to bail out my niece," he said brokenly.

"Certainly," said the sergeant. The security was doubtful, but it was accepted. The uncle went to the door and beckoned. An elderly woman entered, heavily veiled. Presently the young woman came in with the matron, who had evidently been crying. The girl signed her name to the bond; then she saw the veiled woman. Her composure gave way and she flung herself into the woman's arms with a sob.

"Mother!" was all she said.

There was dead silence in the Tenderloin station as the trio left it, but everybody stared thoughtfully at the door after it had closed upon that little drama.

SOAP.

The proposition to create a Democratic campaign fund for the next Presidential election from the sale of soap is novel, perhaps, but incongruous only because the principal use of campaign funds is for the benefit of the class of citizens who do not themselves use soap enough in four years to pay the costs of one good-sized demonstration. Voters who have more than a theoretical acquaintance with detergent preparations for toilet and

laundry are not, as a rule, those whose votes are influenced by even liberal expenditures of campaign funds. Those for whom the ways to the ballot box need to be lubricated by liberal applications of "soap," like the runners and guides of a badly-fitting bureau drawer, are such as admit of classification with "the great unwashed."

There may be an unappreciated touch of humor in the suggestion of Mayor Hinkle of Columbus, who wants to elect on a platform of soap a President "who is opposed to trusts and monopolies; a President who will practice after elected; a President who is in favor of public ownership of public utilities; a President who is in favor of equal taxation for all and special privileges to none; a President who is opposed to monarchies and empires; a President who is opposed to wars and extermination of liberty-loving people, whether in South Africa or elsewhere."

Those who would vote for a candidate acceptable to the people to whom this declaration of principles is satisfactory in its entirety would naturally expect a great deal of what in the vernacular of the heeler is known as soap. It is not likely, however, to be made from the fat fried out of the interests best capable of exuding oleaginous drippings at the relatively high temperatures of a political canvass. Therein the humor of the suggestion becomes obscure, and to enjoy the fun of it we must fall back upon the assumption that Mayor Hinkle intends his suggestion to be taken quite seriously. From that point of view it is highly mirth-provoking.

### FIREPROOFING TEST A SUCCESS.

#### Inflammable Material After Treatment Would Not Burn.

Before representatives of the Fire, Building and Health Departments there was a public test recently of a new fire-proofing process by which theatrical scenery and effects, as well as other materials, may be rendered fire-proof for a period of years. The tests were made by Guido Blenio, the inventor of the process, at his laboratory and workrooms, at 545 West Twenty-second street. Deputy Superintendent John Jordan, of the Bureau of Buildings, accompanied by Engineer Schwartz of the same department, watched the tests for Superintendent Hopper, and said afterward that they would make a favorable report on the process.

During the tests samples of scenery, canvas used for scenery, gauze used for ballet costumes, lace curtains, mattresses, carpets, excelsior, newspapers, and other inflammable matter were subjected to the severest tests after having been saturated in the solu-

tion and then dried. By the use of a Benson blowpipe, flames capable of generating heat to 350 degrees were blown directly against the fire-proof materials. They were charred after being exposed from a minute and a half to three minutes, but did not burn.

### THE PASSING OF THE CORONERS.

Ancient evils die hard. The demand for the abolition of the useless office of Coroner, which has no place in the present system of the administration of criminal law and serves no better purpose than to obstruct justice, has been emphatic for many years and has had the approval of public-spirited citizens and all interested in the administration of the laws for the ends for which they are designed. Bills to abolish this office have been offered year after year, but influences stronger than the will of the people or the public interest have been potent to kill them in committee. Stronger arguments than their advocates have employed have been used at Albany, and no doubt the Coroners had reached the opinion that they might say with the impious King Robert of Sicily, "there is no power can push me from my throne." But King Robert was mistaken. The bill abolishing the office of Coroner with the expiry of the terms of the present incumbents has passed the Legislature after the most determined efforts to defeat it, and the end of the system is in sight. All that the bill needed to commend it to unqualified approval is the clause, "This act shall take effect immediately." The omission treats the incumbents with unmerited consideration. It will be found in every way advantageous to divide the duties of the Coroners between the Police and the Health Departments, and their magisterial powers should vest in the justices of the police courts.

As it stands, the verdict of a Coroner's Jury counts for very little, and the action of a Coroner in fixing or absolving responsibility no longer governs the action of the District-Attorney nor influences that of the Grand Jury. Usually a farce, and often a scandal, Coroners' inquests have ceased to have any value, and the system of which they are a relic has been gradually relegated to the limbo of the obsolete in criminal jurisprudence. This, however, was not the chief objection to the continuance of the Coroners' office. The service has long been the refuge of incompetents, and some of the most active of the Coroners have been least fitted to render the public any useful and honest service. They burden the city with an annual pay roll of $145,000, and their expenses are between $50,000 and $60,000 more. The abo-

lition of the Coroner is a measure of practical reform, and that this Legislature should have granted it is one of the surprises of the year.

THE BALTIMORE TUBERCULOSIS CONFERENCE.

At a conference held in McCoy Hall on the evening of January 28, presided over by Prof. William H. Welch of Baltimore, at which a number of representative physicians interested in the study of tuberculosis from various parts of the country were present, the following motion by Dr. H. M. Bracken, of St. Paul, Minn., and amended by Dr. William S. Thayer, of Baltimore, was unanimously adopted: "Moved, That the chair be authorized to appoint a committee, with power to act, to consider the conditions existing with regard to the proposed tuberculosis congress and other national anti-tuberculosis associations in the United States; also to consider the formation of a national committee to represent this country at the International Congress at Paris, and that the members of this conference will abide by the action of the committee—also that this committee have power to add to its membership."

In accordance with this motion, Prof. William H. Welch appointed the following gentlemen on this committee: Prof. William Osler, Baltimore, Md.; Dr. Edward L. Trudeau, Saranac Lake, N. Y.; Dr. Theobald Smith, Boston, Mass.; Dr. J. G. Adami, Montreal, Canada; Dr. Vincent Y. Bowditch, Boston, Mass.; Dr. S. A. Knopf, New York City; Dr. Mazyck P. Ravenel, Philadelphia, Pa.; Dr. Arnold C. Klebs, Chicago, Ill.; Dr Edward G. Janeway, New York City; Dr. Henry Barton Jacobs, Baltimore, Md.; Dr. H. M. Bracken, St. Paul, Minn.; Dr. Lawrence F. Flick, Philadelphia, Pa.; Dr. Herman M. Biggs, New York City.

A meeting of this committee was held in New York on the evening of February 27, and various plans were discussed, but it was voted to take no definite action till another meeting, to be held probably in New York early in April, when it is hoped that some final action will be taken toward forming a national committee to represent this country at the International Congress at Paris.

TUBERCULOSIS HOSPITAL TO BE BUILT AMONG PINES—THE SOCIETY'S WORK OF TWO YEARS.

At a meeting of the Speedwell Society for Sick and Convalescent Children at the residence of Miss Helen Miller Gould, 579

Fifth avenue, April 13, it was announced that Mrs. Andrew Carnegie had promised to duplicate the largest donation made for the benefit of that organization. It was also announced that Daniel G. Reid of the Rock Island Company had promised to be one of twenty to contribute $5,000 toward a fund of $100,000. Mrs. Russell Sage gave to the founder and president, Mrs. Daniel Sage Mackay, a check for $200.

There have never been sadder tales told or more pathetic pictures shown of little sufferers in any of the severe famines of the East than those which this society brings from the homes of the East Side tenements in New York. The children in almost every instance are suffering from diseases incident to lack of proper care and food. The improvement in them after they come under the influence of the society is almost miraculous. The society was organized by Mrs. Mackay two years ago. Some of its purposes are to relieve the children immediately, without a long red tape routine, to do the greatest possible amount of work with the money at command, to have every cent of the funds go for the benefit of the children, without wasteful expenditure for institutions and employees.

Many of the children treated are taken from the Post-Graduate Hospital of New York, and, by the advice of Dr. Henry D. Chapin, of the hospital, they receive individual treatment. They are boarded in private homes where they can have the "mothering" which Dr. Chapin believes every baby needs. This work is carried on in Morristown, N. J., where there is a resident matron, Mrs. Nannie Rigby, who visits the children every day, and a physician, Dr. Francis H. Glazebrook, who is always within call night or day. Both the doctor and matron were at the meeting yesterday and spoke of the work.

Of 132 children taken to Morristown during the past two years, only 20 have died. All were considered hopeless cases at first. The condition of the children when they are received is miserable. A picture of one of the society's babies is like a model. The subject of the picture is little Morris Reiter, who, when he was received at the hospital in November, 1903, weighed 5 pounds and 8 ounces, and in a few weeks tipped the scales at 25 pounds. Mrs. Rigby said that one of the saddest parts of the work was that of taking the children back to their homes and the old dangers.

Dr. Chapin spoke of his theory of the individual "mothering" needed by sick babies and the possibility of bringing the babies back to a state of perfect health. "If our good millionaires would

give more of their money for relief and less to research they would accomplish more," he said. He also said that he did not believe in the theory of letting the weakest die.

"'Suffer little children to come unto me' does not mean that we are to let them die," said the Rev. Dr. Ernest M. Stires of St. Thomas's Church, "but that we are to teach them how to live."

Mrs. Carnegie's gift will be used for a tuberculosis cottage or hospital on a site chosen in the pines and as near New York as possible. It has been demonstrated that this disease is easily cured in the cases of most children, but it has not been possible to find homes for them in private families from the fear of the "great white plague." The society has now thirty-one patients, although it really has accommodations for only twelve or fifteen. Its ability is strained to the utmost. With the endowment fund it will place trained nurses in the tenement house districts to teach mothers how to prevent disease. No discrimination is made as to sect, nationality, or color among the children.

---

The Society need not go far afield. The pine woods of Long Island with their clean and sandy soil, are admirably adapted to the purpose.

### MAD DOG.

All the experts agree, says the "New York Times," that no more dogs have rabies in summer than in winter, but according to popular impression the malady is one of hot weather, and needed information on the subject is therefore likely to be most easily planted where it is most needed at a time when people most feel the need. Hence is it, probably, that the Health Department of Chicago has just issued a hydrophobia bulletin. It is written in terms within the clear comprehension of all, and gives about the best description we remember to have seen of the symptoms manifested by a dog before he "runs mad." "Beware," it says, "of a dog when it becomes dull and hides away; appears restless; always on the move and prowling; whose countenance is sombre and sullen; walks with head down like a bear. Beware of one that barks at nothing, when all around is still. Beware of a dog that scrapes incessantly and tears up things. Look out for the dog who has become too fond of you and is continually trying to lick your hands and face. Beware, above all, of the dog which has difficulty in swallowing, which appears to have a bone in its

throat, and one that has wandered from home and returns covered with dirt, exhausted and miserable." No one of these manifestations is conclusive evidence that a dog has rabies, or is going to have it, but every one of them is a hint for caution well worth heeding, and if they were kept in mind it would be better both for men and dogs. It will be noticed that there is no mention of that "frothing at the mouth" which for no reason at all is commonly supposed to be the ever-present and indubitable proof that a dog is mad, and no attempt is made to distinguish between the two forms taken by this rare and obscure disease.

## MORTALITY AND MORBIDITY REPORTS AND REVIEWS.

STATE OF NEW YORK.—Monthly Bulletin, Department of Health, for February, 1904, 7,735,000: Total number of deaths, 12,749; annual death rate, 20.7; deaths under 1 year, 1,782; deaths 1 to 5 years, 1,174; deaths at 70 years and over, 2,421; deaths from cerebrospinal meningitis, 48; typhoid fever, 145; malarial diseases, 9; smallpox, 1; scarlet fever, 149; measles, 94; erysipelas, 54; whooping-cough, 37; croup and diphtheria, 305; diarrheal diseases, 207; consumption, 1,179; pneumonia, 1,821; acute respiratory diseases other than pneumonia, 1,002, puerperal diseases, 143; diseases of the digestive system (not acute diarrhea), 606; diseases of the urinary system, 1,014; diseases of the circulatory system, 1,350; diseases of the nervous system, 1,239; cancer, 442; accidents and violence, 570; old age, 542; general diseases not epidemic (except consumption and cancer), 442; unclassified, 1,250.

The most notable fact connected with the mortality of the month is the increased mortality. It likewise exceeds the mortality of January, which was itself a month of excessive death rate, by 500, or to place them on the same basis, by a daily rate of 440 deaths against 400. At the present rate there would be 160,800 deaths in the year, or 44,000 more than occurred in 1903; and taking the two months of January and February, the rate for the year would exceed that of last year by 26,000.

Compared with last month the urban death rate for the entire State is 22 per thousand population, annually, against 20, and

the rural death rate is 20 against 16; the total rate being 20.7 against 18.7. The only material increase has been in deaths from typhoid fever. The percentage of deaths from epidemic diseases is, however, less this month, showing a relative increase in deaths from other causes.

*Pneumonia* was the cause of the chief increase: 1,820 deaths against 1,500 in January, or 14.3 per cent. of the total deaths against 12.3 per cent. With the exception of the Hudson Valley district, which shows no increase over last month, there was a large increase in deaths from pneumonia in all parts of the State. (It may be of interest to note in this connection the meteorological data, which shows for the eastern part of the State uniform cold weather with an unusual number of clear, sunshiny days and high range of barometer.) In none of the sanitary districts were less than 10 per cent. of the deaths from pneumonia, New York City having 16 per cent. of its deaths from this cause, an increase from 14 in January. In the year 1903 pneumonia caused 8 per cent. of the deaths.

*Consumption* diminished, relatively, as but 9.2 per cent. of all deaths were from it, against 9.7. All of the sanitary districts show this relative decrease, which is very marked in the Hudson Valley district.

*Grippe* was epidemic during these two months and was still in progress through March. How far it entered into the mortality of the month is a matter of estimate. In 5,000 deaths returned there were only 250 certificates on which this was given as in any way contributory to the mortality, or but half of one per cent. Without doubt it contributed to the unusual mortality of these months to a much greater degree than this, an analysis of which will be made later in the present epidemical prevalence.

An epidemic of *typhoid fever* developed in Watertown in January and has continued to the present time, through March, about 600 cases having occurred, with 48 deaths, to the present time, contributing largely to the increase in the mortality of this month from this cause. It was traced readily to the *water supply, which is an untreated sewage-bearing stream* and has for years past placed this city in the list of places of high typhoid fever mortality.

*Smallpox* exists in 47 municipalities in the State (at the end of March), but one death only has been reported from it during the month, which occurred in Brooklyn.

In his annual report, just submitted to the Governor (April 10),

State Health Commissioner Lewis says that the most conspicuous feature of the sanitary condition of the State during 1903 was the epidemic of *typhoid fever* which prevailed to an alarming extent at Ithaca and at West Seneca, near Buffalo, and points out that there is evidence to prove that similar conditions to those at Ithaca and West Seneca menace the public health of many municipalities of the State to-day as well as numerous health resorts, which are extensively patronized by citizens of other States besides New York.

Millions of dollars, the Commissioner asserts, are annually lost to the people of the State through preventable diseases. "If the monetary value of a human life is assumed to be $5,000," he says, "the deaths from but five of the preventable diseases during 1903 in this State represent a loss of $94,960,000. These figures seem appalling, and yet millions upon millions can properly be added to this sum, in loss of wages, expense of the care of the sick, and many other expenses incidental to the management of these epidemic and infectious diseases."

The deaths from the five preventable diseases referred to by Dr. Lewis were as follows: Pulmonary tuberculosis, 13,194; diphtheria, 3,056; typhoid fever, 1,665; scarlet fever, 1,057; smallpox, 41; total, 18,992.

The Commissioner says that the paltry $20,000 a year which is available for the purpose of a systematic supervision of water supplies, sewer systems, and drainage, that they may be remedied where danger exists, is too small to meet the required conditions and enforce the law. A new bureau of water supply and drainage in the Health Department is recommended. Immediate action is urged, as a serious epidemic now in progress has exhausted the available funds.

The chemical department made analyses of 69 samples of food and 50 samples of water. Of the food 22 samples, or 32 per cent., were found adulterated. Only such articles as were considered liable to adulteration of some kind were collected for examination. It was found that considerable kerosene oil of inferior and dangerous quality was being sold in violation of law.

In the report of the cancer research laboratory is the following: "The past year has not been characterized by any marked discoveries which can be safely announced to the world, but has been marked by a steady, earnest, and even laborious study along the lines of investigation." The deaths from cancer, according to the

monthly bulletins of the department, show an increase of about 500, or 10 per cent. over the total number the previous year.

The vital statistics of 1903 show a State death rate of 17.6 per 1,000 population and a birth rate of 21.8. "With as close a registration of births as there is of deaths, no doubt the true birth rate would exceed 25 per 1,000 population," says the report. In 1903 there were indexed and filed 89,067 birth certificates, 48,976 deaths, and 21,276 marriage certificates.

From the small number of reports of examinations of eyesight of school children received from school principals, 14.1 per cent. were shown to have defective vision.

New York City, 3,838,024.—Total number of deaths, February, 7,017—annual death rate 23.0: Borough of Manhattan, 1,940,-121; deaths, 3,952—death rate, 24.9. Borough of the Bronx, 294,939; deaths, 450—19.0. Borough of Brooklyn, 1,334,952; deaths, 2,229—22.0. Borough of Queens, 193,494; deaths, 257—16.6. Borough of Richmond, 74,518; deaths, 129—20.8.

*Infectious diseases* reported for the two weeks ended April 2:

| | Week ended Mar. 26. | | Week ended Apr. 2. | |
|---|---|---|---|---|
| | Cases. | Deaths. | Cases. | Deaths. |
| Measles | 1,554 | 29 | 1,265 | 28 |
| Diphtheria and croup | 359 | 44 | 343 | 39 |
| Scarlet fever | 494 | 25 | 393 | 30 |
| Smallpox | 1 | .. | .. | .. |
| Chickenpox | 87 | .. | 56 | .. |
| Tuberculosis | 454 | 199 | 289 | 185 |
| Typhoid fever | 21 | 9 | 19 | 12 |
| Cerebrospinal meningitis | .. | 13 | .. | 31 |
| Totals | 1,970 | 319 | 2,365 | 325 |

CALIFORNIA.—San Francisco. Most recent report of *plague* received, March 12—119th case. Summary (Public Health Reports).—April 8: Calendar year, 1900, 22 cases, 22 deaths; 1901, 30 cases, 25 deaths; 1902, 41 cases, 41 deaths; 1903, 17 cases, 17 deaths.

COLORADO.—Denver, 175,000. Report for January: Deaths, 293—49 under 5 years; premature and still births, 12; death rate, per annum, 20.08. Deaths from phthisis, 57—"49 contracted elsewhere"; typhoid fever, 3 cases, 4 deaths; smallpox, 13 cases;

chickenpox, 11 cases; diphtheria, 43 cases, 8 deaths; scarlet fever, 59 cases, 4 deaths; measles, 99 cases, 1 death; erysipelas, 18 cases; deaths from heart diseases, 15; pneumonia, 59; broncho-pneumonia, 8; nephritis, 16; cancer, 3.

CONNECTICUT.—Bulletin for February: Deaths, 1,384—55 less than in January, and 81 more than in February of last year, and 132 more than the average number of deaths in February for the five years preceding. The death rate was 17.0 for the large towns; for the small towns, 19.0; for the whole State, 17.5.

Cases of deaths from infectious diseases reported: Measles, 716, 4 deaths, in 66 towns; scarlet fever, 194, 1 death, in 51 towns; la grippe, 29 deaths; diphtheria and croup, 94, 5 deaths, in 34 towns; whooping-cough, 61, 5 deaths, in 14 towns; typhoid fever, 21, 1 death, in 15 towns; consumption, 24, 23 deaths, in 11 towns.

### *Pneumonia.*

The 217 deaths from pneumonia in the shortest month in the year is so much in excess of other diseases and of its own fatality in former years, as to force the inquiry if there are any means of prevention. Since the pandemic of la grippe in 1899-90, the prominence of pneumonia as a fatal disease has been steadily above any previous record. The records show that ever since 1899-90, in the winter and spring months, pneumonia has been more fatal than any other malady. Now la grippe is an infectious and communicable disease with a special tendency to attack the lungs. Pneumonia is also an infectious disease, and the infection is believed to be very prevalent, and often found in the mouths of healthy people, who are quite able to resist it so long as their respiratory surfaces are in a normal condition. But attacked by la grippe, they become also vulnerable to the disease germ which causes pneumonia. Hence in many cases the order is, first the grip, then pneumonia. So, too, any other respiratory irritant will have a like effect and render the subject susceptible to the pneumonic inflammation. Depressing influences of every kind are contributory to this susceptibility, but especially those which may tend to inflame the respiratory passages.

DISTRICT OF COLUMBIA, 300,902—91,603 colored. Report for the week ended April 2: Deaths, 125—75 white, 50 colored. Death rates, 18.6, 28.4: 21.6, as compared with 17.6, 30.3, and 21.4 for the corresponding period of last year. Deaths from consump-

tion, 21; diseases of the heart, 17; kidneys, 9; from pneumonia, 8; and grippe, 6. Diphtheria cases increased from 11 to 14—7 new cases and 4 discharges. Scarlet fever diminished, but 5 new cases and 19 discharged, leaving 41 cases under treatment in 26 different premises, as against 55 cases the previous week. Typhoid fever, 7 new cases, 6 discharged; 46 cases under observation.

No new cases of smallpox have occurred and the city is entirely free from this disease.

The births reported numbered 104, of which 66 were white and 38 were colored.

The weather conditions prevalent during the past week were as follows: Temperature (mean) 45°, mean relative humidity 76, mean actual barometer 30.03. The winds were northwesterly in direction, averaging 7 miles an hour, with a maximum velocity of 24 miles on the 2d instant. The maximum temperature was 69° on the 1st, and the minimum 24° on the 24th ultimo.

ILLINOIS.—Chicago, 1,950,000. Health Department Bulletin: Quarter ended March 31; month of March, 1904. Compared with the other large cities of the country, Chicago has come out remarkably well through the trying ordeal of a memorable winter. The 7,675 deaths reported during the first three months of the year represent an annual death rate of 15.77 per thousand of population. For the corresponding quarter of 1903 the total deaths were 7,856 and the annual death rate was 17.10 per thousand, or nearly 8 per cent (7.7) higher. New York, 3,437,202; 21,538, 25.22. Philadelphia, 1,408,154; 8,205, 23.39. Boston, 617,950; 2,924, 18.95. Baltimore, 541,000; 3,058, 22.73. Chicago, 1,950,000; 7,675, 15.77.

Mortality for the quarter ended March 31, 1904, compared with the corresponding quarter of 1903:

| | 1904. | 1903. | Dec. | Inc. |
|---|---|---|---|---|
| Total deaths, all causes | 7,675 | 7,856 | 181 | .. |
| Death rate per annum, per 1,000. | 15.77 | 17.10 | 1.33 | .. |
| Under 1 year | 1,368 | 1,361 | .. | 7 |
| Between 1 and 5 years | 571 | 814 | 243 | .. |
| Over 60 years | 1,724 | 1,703 | .. | 21 |
| Bright's disease | 478 | 431 | .. | 47 |
| Bronchitis | 357 | 386 | 29 | .. |
| Consumption | 858 | 774 | .. | 84 |
| Cancer | 282 | 257 | .. | 25 |
| Convulsions | 193 | 187 | .. | 6 |

| | | | | |
|---|---|---|---|---|
| Diphtheria | 109 | 138 | 29 | .. |
| Heart diseases | 582 | 595 | 13 | .. |
| Influenza | 50 | 106 | 56 | .. |
| Measles | 3 | 69 | 66 | .. |
| Nervous diseases | 311 | 360 | 49 | .. |
| Pneumonia | 1,811 | 1,641 | .. | 170 |
| Typhoid fever | 97 | 200 | 103 | .. |
| Scarlet fever | 59 | 103 | 44 | .. |
| Smallpox | 1 | 23 | 22 | .. |
| Suicide | 101 | 127 | 26 | .. |
| Violence—other than suicide | 340 | 321 | .. | 19 |
| Whooping cough | 4 | 116 | 112 | .. |

Statement of mortality for the month of March, 1904, compared with the preceding month and with the corresponding month of 1903:

| | Mar. 1904. | Feb. 1904. | Mar. 1903. |
|---|---|---|---|
| Total deaths, all causes | 2,609 | 2,705 | 2,713 |
| Annual death rate per 1,000 | 15.74 | 17.92 | 16.94 |
| Under 1 year | 430 | 499 | 453 |
| Between 1 and 5 years | 176 | 215 | 275 |
| Over 60 years | 573 | 618 | 573 |
| Bright's disease | 157 | 165 | 142 |
| Bronchitis | 93 | 141 | 127 |
| Consumption | 332 | 278 | 280 |
| Cancer | 97 | 100 | 80 |
| Convulsions | 61 | 73 | 73 |
| Diphtheria | 31 | 38 | 49 |
| Heart diseases | 181 | 196 | 207 |
| Influenza | 18 | 31 | 61 |
| Measles | 2 | .. | 22 |
| Nervous diseases | 112 | 104 | 132 |
| Pneumonia | 621 | 686 | 582 |
| Scarlet fever | 18 | 26 | 30 |
| Smallpox | .. | .. | 8 |
| Suicide | 38 | 32 | 52 |
| Typhoid fever | 34 | 33 | 49 |
| Violence (other than suicide) | 114 | 116 | 101 |
| Whooping cough | 3 | .. | 42 |

The city water is still bad, all stations showing the presence of serious contamination during the last three days of the week.

Nearly every sample shows the presence of colon bacilli and an excessive number of other bacteria. This condition is becoming progressively worse, and may be expected to continue for some weeks.

INDIANA.—State Board of Health Bulletin for February: The total number , 3.477, rate 17.4. Corresponding month last year, 2,677, 13.8. Preceding month, 3,177—14.8. The increase in pneumonia accounts in a degree for this increase in deaths.—Deaths under one year, 521, or 15.3 per cent. of the total; 1 to 5 years, 260; 5 to 10 years, 91; 10 to 15 years, 63; 15 to 20 years, 109; 65 and over, 921, or 27.6 per cent. of the total.—Deaths from pulmonary tuberculosis, 365; typhoid fever, 60; diphtheria, 32; scarlet fever, 23; pneumonia, 711; influenza, 116; cancer, 78; violence, 142; smallpox, 5. The city death rate was 21.7, and the country rate 15.1. The death rate among old people in the country was higher than in the same class in the cities. The cities present the highest death rate in consumption, typhoid fever and pneumonia. The country presents a higher death rate in influenza. Two of the smallpox deaths occurred in cities, and three in the country.

Measles was the most prevalent disease, and then follow in the order given, bronchitis, pneumonia, influenza, tonsillitis, rheumatism, scarlet fever, typhoid fever, diphtheria, diarrheal diseases, erysipelas, whooping-cough, cerebrospinal meningitis, dysentery, puerperal fever, cholera morbus, cholera infantum.

Four hundred and eight cases of smallpox were reported, with 5 deaths, in 34 counties. In the preceding month there were 480 cases and 8 deaths in 38 counties, and in the corresponding month last year there were 889 cases with 50 deaths in 59 counties. Sixty deaths were reported from typhoid fever, and in the corresponding month last year there were 49 deaths. This is an increase of almost 20 per cent., for which we can offer no particular reason.

The increase in pneumonia is alarming, the total deaths being almost twice as many as from tuberculosis. The pneumonia death rate in the cities is 417 per 100,000, and in the country 323. Of the total pneumonia deaths, 353 were females and 429 males, and 155 were children under one year of age. Of the 142 deaths from violence 6 were murders, 21 suicides, and the remainder accidents.

A careful study of the matter points to the conclusion that the

pneumonia increase attended the increase in measles and influenza and was not caused by weather conditions.

IOWA.—State Board of Health Bulletin, February-March: Outbreaks of infectious diseases in January: Typhoid fever in Vinton; chickenpox, Des Moines; measles in 3 localities; diphtheria in 9 localities; smallpox in 8 localities; scarlet fever in 23 localities. In February: Chickenpox, Spirit Lake; measles in 11 localities; diphtheria in 13 localities; scarlet fever in 31 localities; smallpox in 12 localities.

LOUISIANA.—New Orleans, 317,000—84,000 colored. Report for March, 1904: Total deaths, 397 white, 249 colored: 646; deaths under 1 year—white, 70; colored, 34; 1 to 5 years—white, 31; colored, 19. Death rates: white, 20.44; colored, 35.57: 24.45. Deaths from typhoid fever, 2 white; pneumonia, 42 white, 37 colored; tuberculosis of the lungs, 42 white, 47 colored; Bright's disease, 31 white, 10 colored; cancer, 15 white, 3 colored; senile debility, 12 white, 8 colored.

MICHIGAN.—The Secretary of the State Board of Health reports: Compared with the preceding month, cancer, smallpox, cholera morbus, meningitis, membranous croup and puerperal fever were more prevalent; and syphilis, typhoid fever, intermittent fever, and dysentery were less prevalent. Compared with the average for March in the 10 years, 1894-1903, scarlet fever, typhoid fever, smallpox, diphtheria and membranous croup were more than usually prevalent; and pneumonia, erysipelas, inflammation of bowels, intermittent fever, remittent fever, whooping-cough, dysentery, cholera morbus and puerperal fever were less than usually prevalent. Meningitis was reported present at 10 places, whooping cough at 22 places; diphtheria at 81 places, typhoid fever at 82 places, smallpox at 138 places, measles at 152 places, scarlet fever at 162 places; pneumonia at 166 places, and consumption at 238 places.

The total number of deaths returned to the Department of State for the month of March was 3,406, 19 more than for the preceding month. Death rate, 16.0, as compared with 17.1 for the preceding month.

Deaths from prevailing causes: Tuberculosis of lungs, 227; other forms of tuberculosis, 43; typhoid fever, 57; diphtheria and croup, 38; scarlet fever, 31; measles, 27; whooping-cough, 21;

smallpox, 3; pneumonia, 384; influenza, 156; cancer, 149; accidents and violence, 199.

By ages there were 527 deaths of infants under 1 year of age; 185 aged 1 to 4 years, inclusive, and 1,159 deaths of elderly persons 65 years and over.

MINNESOTA.—Minneapolis, 240,000. Report for February: Deaths, 221—43 under 5 years. Annual death rate, 9.8. Deaths from typhoid fever, 17; consumption, 23; cancer, 1; organic heart disease, 19; other diseases of the circulatory system, 4; bronchitis, 2; pneumonia and broncho-pneumonia, 36; Bright's disease, 9.

St. Paul, 185,000. Report for February: Deaths, 156—37 under 5 years; death rate, 10.11. Deaths from consumption, 9; tuberculosis, 5; pneumonia, 21; broncho-pneumonia, 1; typhoid fever, 2; nephritis, 8; scarlet fever, 1; cancer, 3.

MISSOURI.—St. Louis, 645,000. Report for February: Deaths, 1,013—208 under 5 years; annual death rate, 18.84. Deaths from zymotic diseases, 79; scarlatina, 15; diphtherian croup, 11; typhoid fever, 7; whooping-cough, 5; consumption, 104; pneumonia, 171; bronchitis, 55; other diseases of the respiratory organs, 43; diseases of the circulatory system, 71; Bright's disease and nephritis, 47; cancer, 30.

NEW JERSEY.—Hudson County (Jersey City and environs), 433,573. Report for February: Deaths, 760—209 under 5 years; death rate, 21.0. Deaths from croup, 12; diphtheria, 8; scarlet fever, 15; whooping-cough, 4; typhoid fever, 6; all zymotic diseases, 76; phthisis, 99; bronchitis, 25; pneumonia, 126; cancer, 25; violence, 35; suicides, 10; still births, 59.

NORTH CAROLINA.—Bulletin of mortality for February summarizes reports of 23 towns, with aggregate populations: White, 86,250; colored, 58,550: 144,800. Deaths, respectively, 92, 142: 234. Death rates, 12.6, 29.1: 19.4. Deaths from consumption, white, 12; colored, 25: 37. Heart diseases, white, 12; colored, 11: 23. Pneumonia, white, 15; colored, 29: 44.

Biennial report, 1901-1902: The primary work of the Board for the period was the protection and purification of the water supplies, and insistence upon water analysis whenever and wherever cases of typhoid fever have occurred. Efforts in this direction, however, the secretary reports, have borne but little fruit. Legis-

lation has been effected for securing prompt reports to, and the co-operation of the county superintendents of health with the State Board, for the prevention of typhoid fever, smallpox and other preventable diseases. Smallpox was a continuous subject of contention, but with encouraging success, the number of cases reported being near 1,000 less than for 1899-1900: 1,945, against 2,806, of whom 530 were white and 1,415 colored. The death rates were 2.83 per cent. for the white, against 4.78 per cent. for the colored. The difference is attributed to a like proportion of the unvaccinated, respectively. Special committee and other reports by the members of and inspectors for the Board show that the most important present needs of the cities, towns and public institutions for the maintenance of the public health and the health of dependent persons throughout the State are the protection of the water supplies, sewerage and drainage.

OHIO.—Sanitary Bulletin, January-February, 1904. For the most part, proceedings of the fourteenth annual meeting of the State and Local Boards of Health, at Columbus, January 21st and 22d, of practical interest to health authorities generally.

Cases of and deaths from infectious diseases reported to State Board of Health during 11 weeks, ended March 12, 1904, 106 places, with an aggregate population of 1,410,379: Croup and diphtheria, 652 cases, 66 deaths; scarlet fever, 444 cases, 22 deaths; typhoid fever, 1,256 cases, 137 deaths; whooping-cough, 64 cases, 5 deaths; measles, 3,591 cases, 51 deaths. *Smallpox,* in 88 localities, 1,282 cases, 25 deaths.

Cleveland, 430,000. Report for February: Deaths, 682—241 under 5 years; annual death rate, 19.03. Deaths from typhoid fever, 45; diphtheria and croup, 75; tubercle of lungs, 63; pneumonia, 71; broncho-pneumonia, 18; bronchitis, 12; cancer, 22; heart diseases, 13; Bright's disease, 31; early infancy—congenital icterus, debility, etc.—49; senile debility, 27.

PENNSYLVANIA.—Philadelphia, 1,408,154. Report for week ended April 2: Deaths, 588—145 under 5 years; annual death rate, 21.72. Deaths from typhoid fever, 24; Bright's disease, 34; consumption, 74; diphtheria, 9; measles, 13; diseases of the heart, 54; pneumonia, 61; broncho-pneumonia, 35; congestion of the lungs, 4; cancer, 18; *smallpox,* 7.

Report on contagious diseases, compared with that of the previous week:

| | Week end'd Apr. 2. | | Week end'd Mar. 26. | |
|---|---|---|---|---|
| | Cases. | Deaths. | Cases. | Deaths. |
| Smallpox ..... | 32 | 7 | 35 | 8 |
| Diphtheria ..... | 67 | 9 | 88 | 12 |
| Scarlet fever..... | 92 | 7 | 116 | 5 |
| Typhoid fever..... | 321 | 24 | 148 | 17 |
| Consumption ..... | .. | 74 | .. | 60 |
| Cerebrospinal fever.. | .. | .. | .. | .. |

*Medical Inspection of Schools Instituted.*—The daily medical inspection of children in the Public Schools of Philadelphia began on April 5th. With the possible exception of a few schools in outlying sections, every school will be visited daily. Director Martin states that the first object of the inspectors will be to exclude children suffering from contagious diseases; secondly, to exclude all those who have non-contagious diseases, but who are too ill to remain in school. Afterward there will be made a careful examination in order to discover physical defects, including spinal curvature, flatfoot, deafness, defective eyesight, narrow chest, etc. Diagnoses will be communicated to teachers by a code in order that the child may not know the nature of the disease. In all cases the parents are to decide regarding any medical care to be instituted.

Pittsburg, 354,000. Report for the week ended April 2: Deaths, 138—54 under 5 years; annual death rate, 20.27. Deaths from diphtheria and croup, 5; whooping-cough, 2; measles, 2; typhoid fever, 6; tuberculosis, 3; pneumonia, 21; cancer, 4.

*The Butler Epidemic.*—The total number of cases reported up to the time of closing the Emergency Hospital, was 1,364, and the number of deaths, 115. A noteworthy feature of the epidemic was the infection of about twenty of the nurses, amounting to nearly 10 per cent. of the number employed.

PHILIPPINE ISLANDS AND MANILA, 219,241.—Filipinos, 189,782; Chinese, 21,230; Americans, 4,389; other nationalities, 4,590. Report for November, 1903: Total number of deaths, 1,026—404 infants under 1 year.

The principal causes of mortality and more important diseases entering into the same, with the total number of deaths therefrom, were: Convulsions of children, 342; pulmonary tuberculosis, 68; acute bronchitis, 65; eclampsia, nonpuerperal, 58; chronic bronchitis, 41; beri-beri, 36; meningitis, 33; congenital

debility, 28; chronic diarrhea and enteritis, 25; dysentery, 24; Asiatic cholera, 23; malarial fevers, 16; puerperal septicæmia, 12; cerebral hemorrhage, 10; typhoid fever, 8; tetanus, 7; smallpox, 2; bubonic plague, 2; leprosy, 1; diphtheria, 1.

There were 2 deaths from *bubonic plague,* both in Filipinos. Prophylactic inoculations against plague have been so generally carried out among the Chinese as to largely protect that especially susceptible class against this disease. During the month there were 2,157 primary and 1,515 secondary antiplague inoculations made among the Chinese.

There were 23 deaths from *Asiatic cholera* among residents, of which none occurred in whites and but 2 in Chinese. There were also 3 deaths from this disease among transients. Following the sudden outbreak in September, of which mention was made in the report for that month, this disease has steadily yielded to the repressive measures taken. Although during the month a number of cholera cases occurred on the drainage area of the city water supply, the special efforts of the Board of Health have successfully prevented the infection of this supply.

*Beri-beri* caused 36 deaths, of which 13 occurred among Chinese, while *smallpox* caused 2 deaths, of which 1 was an American.

PORTO RICO, 953.243.—Report for the period, May 1, 1900, to June 30, 1903; 233 pages, comprehending a sketch of the physical features of the island, the municipal organization, more particularly the organization and work of the Board of Health and the subjects with which it had to contend: garbage, sewerage, drainage, plumbing, milk and other food supplies, slaughter of food animals, hospitals, cemeteries, diseases of animals, etc., showing a very complete and efficient organization. Vital statistics are presented, as in the monthly, from which abstracts have been regularly given in our pages.

WISCONSIN.—Milwaukee, 315,000. Report for February: Deaths, 389—117 under 5 years; annual death rate, 15.06. Deaths from typhoid fever, 1; diphtheria, 3; phthisis, 39; pneumonia and broncho-pneumonia, 69; bronchitis, 18; cancer, 17; organic heart disease, 36; Bright's disease, 17; congenital debility, 30; senile debility, 26; violence, 19.

Smallpox has about died out, there being only a case here and there. A remarkable fact is, that although there were a large number of cases of contagious diseases reported, still the deaths

from these diseases were very few. Typhoid fever, 1; scarlet fever, 2; whooping-cough, 1; diphtheria, 1.

CUBA.—Havana. Chief Sanitary Officer Finlay reports for December, 1903, the total mortality in the district of Havana, 528—54 more than in the preceding 31 days, and 71 more than in December of last year; annual type of 23.69, the highest annual death rate in any month of the year 1903, the next highest having occurred in April, with 22.00 per thousand.

The additional deaths (54) in the district of Havana, as compared with the preceding 31 days, occur mostly under the headings of: Simple meningitis, 11; diseases of arteries, embolism and thrombosis, 29; broncho-pneumonia, 15; diarrhea and enteritis, 14. On the other hand, there was a diminution in the deaths from "general diseases" (26), including scarlet fever, 20; cancer, 5, and only 2 additional deaths from tuberculosis. The deaths among children under 5 years of age, 135, as against 148 in the preceding 31 days, and against 121 in December, 1902, when there had been no deaths from scarlet fever.

BUBONIC PLAGUE IN PERU.—According to a telegram from Mr. Dudley, the United States Minister at Lima, Peru, received at the State Department, Washington, on March 31st, that city has been attacked by Asiatic plague. The same telegram states that there was 32 cases in the week ended March 26th, and that 2 deaths occurred on March 30th. The State Department has notified the Marine Hospital and the Public Health Service of Mr. Dudley's information.

PLAGUE IN INDIA.—The deaths by bubonic plague in India during the week ended on March 19th numbered 40,527, an increase of 7,000 over those for the preceding seven days.

BUBONIC PLAGUE AND EPIZOOTY IN MAURITIUS.—Under date of December 8, 1903, United States Vice-Consul J. W. Hollway, of Port Louis, Mauritius, reports that the bubonic plague, which seemed to have been abating in the island, had, at the date of his writing, assumed an epidemic form of a virulent type. The number of cases of bubonic plague on the island in 1902 was 506, of which 386 died—a decrease, as compared with 1901, of 587 cases and 419 deaths. Of the "surrah," or epizooty, which broke out among the horses and cattle in 1902, he reports its sad havoc

during the year 1903, it being estimated that three-fourths of the draft animals succumbed thereto, and that agriculture—especially the sugar plantations—suffered very severely, but owing to the substitution of mechanical for animal traction a calamity was averted. Mr. Hollway says that the common house-fly is supposed to spread the distemper.

DECREASE OF MORTALITY FROM TUBERCULOSIS IN GERMANY.—United States Consul-General Richard Guenther, of Frankfort, Germany, under date of December 17, 1903, reports that the monograph of Professor Mayet, "Twenty-five Years of Statistics of Mortality," published by the German imperial office of statistics, furnishes a gratifying picture of the decrease of mortality from tuberculosis in Germany. It says the mortality from this cause in the German cities of 15,000 and more inhabitants for every 10,000 people for every five years was, on the average, as

| | |
|---|---|
| 1877-1881 | 357.7 |
| 1882-1886 | 346.2 |
| 1887-1891 | 304 |
| 1892-1896 | 255.5 |
| 1897-1901 | 218.7 |

SEWERAGE AND DRAINING OF MAZATLAN.—Señor Victor Patron, president of the Mazatlan Board of Trade, received a telegram on October 7 from Governor Francisco Canedo, of Sinaloa, confirming the contract with the Mexican Government, between Governor Canedo, for the State of Sinaloa and the city of Mazatlan, and William Astor Chanler, of New York City, who is represented in Mexico by Attorney Alfredo Chavero, of the City of Mexico, to furnish a complete system of sanitary sewerage and drainage for the city of Mazatlan. The price for work and material, as well as all conditions, are on the same basis as the contract now in force with the city of Tampico, where a like piece of improvement is now being constructed. For information as to sub-contracts, furnishing material, and machinery, interested parties should apply to Alfredo Chavero, attorney, City of Mexico, or William Astor Chanler, New York City.—Louis Kaiser, Consul, Mazatlan, Mexico, November 28, 1903.

## SUICIDE.

In an instructive article contributed to "The Independent," Mr. George P. Upton, perhaps the best unofficial authority in this

country on the subject treated, shows that within the past thirteen years 77,617 people have committed suicide in this country. In 1902 fifty cities furnished 2,500 cases of self-destruction, out of a total of 8,132 for the entire country. Of the 77,617 suicides in the thirteen-year period, 57,317 were males and 20,400 females. The greatest ratio of increase is among young women under 25 years of age. Another curious fact is the increasing number of children who kill themselves.

Of the methods chosen for ending life it is curious that a very large proportion select carbolic acid. It is cheap and easily accessible, no doubt, but it must cause an extremely painful death, giving the victim a brief period of intense suffering while the vital organs are being destroyed by corrosion. The suggestion that the sale of carbolic acid should be placed under the same restraint as other deadly poisons does not seem to promise much. So many other and, for that matter, easier modes of self-destruction are available that to cut off one would probably not affect the net result appreciably. Prior to 1894 more suicides died from bullets than from all other agencies combined. Since then poison seems to have been preferred, with carbolic acid a favorite. The remainder is divided between hanging, drowning, the knife, jumping from windows or roofs, gas, fire and dynamite, while as many as 800 selected the expedient of throwing themselves in front of locomotives.

These are gruesome statistics. The lesson to be learned from them depends largely upon the point of view. For some its moral, for others its ethical, aspects predominate. For all it must mean that an increasing percentage of people of at least average sanity find life a bore, and, for one or another of an almost infinite variety of morbid and sophistical reasons, choose to end it. The more complex our civilization and the greater the opportunity for failure and disappointment, the stronger the tendency to self-destruction.

### WHERE MEASLES COME FROM.

"If I understand this measles business right," says a Carthage punster, "the German measles come from a germ, the French measles from a Parisite, the Irish measles from a Mike-crobe, and the black measles from Africa."

## BOOK REVIEWS.

FISCHER—INFANT-FEEDING IN ITS RELATION TO HEALTH AND DISEASE.—A modern book on all methods of feeding. For students, practitioners and nurses. By LOUIS FISCHER, M.D., Visiting Physician to the Willard Parker and Riverside Hospitals, of New York City; Attending Physician to the Children's Service of the New York German Poliklinik: Former Instructor in Diseases of Children at the New York Post-Graduate Medical School and Hospital; Fellow of the New York Academy of Medicine, etc. Third edition, thoroughly revised and largely rewritten. Containing 54 illustrations, with 24 charts and tables, mostly original. 357 pages, 5¾ x 8¾ inches. Neatly bound in extra cloth. Price, $2.00, net. F. A. DAVIS COMPANY, Publishers, 1914-16 Cherry street, Philadelphia, Pa.

The succeeding editions of this excellent book keep apace with the improvements in this progressive field of study. In this edition, the notable improvements are the feeding of dyspeptic and atrophied children; rectal feeding in institution cases, and the feeding of children with cleft palate. Butter-milk feeding is the subject of a new chapter of evident practical utility. New illustrations of poor breast milk are shown as reason for the substitution of artificial food. Modified milk is also the subject of a special chapter, comprehending much useful information. In several other respects—indeed, as a whole—the book is thoroughly up to date and commendable.

THE INTERNATIONAL MEDICAL ANNUAL, 1904.—Twenty-second year of publication. 8vo. 740 pp., and with numerous illustrations. Post or express paid, $3.00, net. E. B. TREAT & Co., Publishers, 241-243 West 23d street, New York.

This work maintains its accorded excellence as a careful collation of the cream of medical progress for the year. It gives the gist of an amazingly comprehensive category of subjects of interest to all physicians, with an elaborate index, affording the utmost facility for ready reference and practical utility.

THE DECLARATION OF INDEPENDENCE, from M. WALTER DUNNE, Publisher, 135 Fifth avenue, New York, is an admirable presentation. A reduced facsimile of the original, 22 x 30, and done in seven colors on choice drawing-paper, with the seals of the original States and the United States. Each copy bears the

certificate of the Secretary of State in facsimile, attesting its authenticity.

NEW JERSEY TRAINING SCHOOL FOR FEEBLE-MINDED GIRLS AND BOYS.—Fifteenth Annual Report, 1903. At the close of the year, May 21, 1902, the population was 89 girls, 163 boys: 252. Admitted during the year, 22 girls, 26 boys: 48. Enrolment, 111 girls, 189 boys: 300. Dismissed, 15: 4 girls and 11 boys. Died, 6—3 of each.

The physician reports the general health of the institution throughout the year good; almost practical freedom from contagious diseases—an outbreak of measles limited to one cottage.

"One of the most frequent questions asked is: What can be done in a school for the feeble minded to make that child more useful or nearer a normal child? Much depends on whether the child is an idiot, a high or low grade imbecile, or a backward child. It is easy to distinguish an idiot from a low or a high grade imbecile; but to distinguish a high-grade imbecile from a backward child is not always so easy, and may require some diagnostic skill.

"An idiot will always remain the same. His habits may be somewhat improved, but we can expect little besides. A low or middle grade imbecile may become more tidy, useful and better mannered, and in many ways show an improvement, but unless under constant training he soon falls back, and if neglected, will rapidly retrograde where he was before he came under constant training. The high-grade imbecile or the backward child is the one that responds most to treatment.

"As manual training and gymnastics are essential in developing dormant faculties, they form a most important part in our work. They are 'education by doing.' We must not try to develop a single set or series of muscles in simple or complex movements, but develop to some extent the entire muscular system, for the defective child's entire body must be stimulated, and in that way we reach the brain areas, as the motor centers are the special avenues to the higher cerebration.

"All children, both normal and abnormal, have physical and moral habits, either good or bad. Not only habits of body and of mind, but cleanly and methodical ways, conduct at the table, at rising, at lying down and in the training-room, at assembly, at play, at work, at day school, if capable of it, at kindergarten, if capable of it, at manual labor, if capable of that.

"We must teach these children self-control, and unless we can overcome bad habits in the younger years, there is but little hope after they become fixed. And so we are responsible to a greater or less extent for good and bad habits which are formed, and the child's progress may be measured to some extent by the influence we exert. By careful supervision and attention the bad habits are diminished and the good increased."

Brief assays are appended on "The Educational Phase of the Work," and "Humanitarian Aspects."—Edward R. Johnstone, Superintendent, Vineland, N. J.

THE AMERICAN SOCIETY FOR THE PREVENTION OF CRUELTY TO ANIMALS.—Thirty-eighth Annual Report, 1903.

There appears to have been considerable enlargement in the scope of the work of the Society during the year, and continued encouragement by increasing public sentiment in its favor. The last mortgage, with which the headquarters of the Society has been burdened, has been extinguished, and for the first time in the history of the corporation the Society is in the possession of a building especially erected for its work, free and clear of all encumbrance, and with a cash balance on hand of $2,404.40.

The superintendent reports that 90 per cent. of complaints of acts of cruelty to animals are not prosecuted, because the alleged cruelty is of such a trifling nature as not to warrant such procedure. Underground, and consequently, insufficiently ventilated and overcrowded horse stables have been a constant subject of concern. Considerable progress has been made in the effort to overcome these conditions, but much yet remains to be done. The cruelty of overloading is an abiding bane, requiring constant attention. It is but rarely done through ignorance, however, but for mercenary motives and, for the same reason, it is defended and conviction rendered difficult.

A number of striking cases are reported in detail. They are well calculated to promote the work of the Society. Appended is a comprehensive list of the Societies of North and South America, and of kindred societies in other countries, devoted to the purpose, and a historical sketch of the work accomplished.

ADIRONDACK COTTAGE SANITARIUM, SARANAC LAKE, N. Y.—Nineteenth Annual Report. EDWARD L. TRUDEAU, M.D., Physician in Charge.

The principal improvements effected during the year have been

the rebuilding or Hall Memorial Cottage; a new reservoir, and a new icehouse, with cold-storage rooms.

The Free Bed Fund has been utilized, as in past years, to aid as many as possible of the needy patients. Fifteen patients have been kept in the institution without charge.

The medical report shows that 298 patients have been treated during the past year, which is the largest number treated during any year since the Sanitarium was established.

A most exhaustive inquiry has been made by Dr. Lawrason Brown, the Resident Physician, bearing on the permanency of the good results obtained at the Sanitarium in past years. Of 1,500 cases which have been discharged, from two to seventeen years ago, 334 could not be traced, leaving 1,066 which have been traced. Of these, 46.7 per cent. are still living. Thirty-one per cent. are known to be well at present; in 6.5 per cent. the disease is still arrested; 4 per cent. have relapsed; 5.2 per cent. are chronic invalids, and 53.3 per cent. are dead. Thus we learn that 31 per cent. of all cases discharged from two to seventeen years ago have remained well.

"The object of the Adirondack Cottage Sanitarium is to help back to health people of limited means who are suffering from tuberculosis, and could not otherwise afford the time and expense necessary for its successful cure. So general has been the support of its friends that the sanitarium is well equipped for combating the disease most successfully. There is still one thing needed to supplement the treatment, and this letter is intended to explain that need, and ask your hearty co-operation to supply it.

"The inactivity necessary for the successful treatment of tuberculosis renders patients, at their discharge, unfit for immediate return to their former active life. To make their cure permanent it is often advisable to follow the sanitarium treatment by several months, and sometimes several years, of light and healthful work.

"The patients at the sanitarium represent a great diversity of trades, crafts and professions. It seems very probable, also, that there exist positions where a moderate amount of work is required, but not enough to justify a salary which would attract a perfectly able-bodied person of equal skill and intelligence.

"To meet this need the sanitarium has organized a co-operative employment bureau, in behalf of which it asks the earnest support of patients, ex-patients, and all friends of the institution.

"Blank forms have been prepared asking for the information necessary to guide the bureau in making the best selection of

candidates. The resident physicians will give this matter their careful attention, and will furnish full information, in each case, as to the condition and physical limitations of the candidate.

"No patient will be recommended to a position who will in any way endanger the health of his associates."

ADIRONDACK COTTAGE SANITARIUM CO-OPERATIVE BUREAU,
LLEWELLYN R. PERKINS, *Secretary.*

MEDICAL LIBRARY AND HISTORICAL JOURNAL QUARTERLY, to be "Devoted to Medical Libraries, Bibliography, History and Biography"—that is its aim. And this does not mean a series of dry-as-dust articles on ancient worthies, culled from some encyclopedia. $2.00 a year. ALBERT T. HUNTINGTON, Editor. Address all communications, Medical Library and Historical Journal, 1313 Bedford avenue, Brooklyn, N. Y., U. S. A.

BROCHURES AND REPRINTS RECEIVED.

Experiments Concerning Tuberculosis, under the supervision of the Biochemic Division, Part I: The Virulence of Human and Bovine Tubercle Bacilli for Guinea-pigs and Rabbits, by Marion Dorset, M.D. Bulletin No. 52, Bureau of Animal industry, U. S. Department of Agriculture, Washington, D. C.

Bovine Tuberculosis and Public Health. D. E. Salmon, D.V.M. Bulletin No. 53, Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C.

Keeping Quality of Butter, 1. Canned butter, Lars A. Rogers. Bulletin No. 57, Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C.

Clinical Reports by the Surgeons of the New Amsterdam Eye and Ear Hospital for 1903, 230 West 30th street, New York: Mastoiditis, Thomas R. Pooley, M.D., New York; Diagnosis of Internal Ear Diseases, Geo. W. McDowell, M.D., New York.

Recent Advances in the Management of the Diseases of Children. C. G. Kerley, M.D., New York.

Movable Kidney, Treatment of 442 cases, without Surgical Intervention. Charles D. Aaron, M.D., Detroit, Mich.

Flatulence and Tympanites. *Ibid.*

Subsequent Histories of Arrested Cases of Phthisis Treated at the Sharon Sanitarium. Vincent Y. Bowditch, M.D., Boston, Mass.

Psoriasis. S. C. Martin, M.D., St. Louis, Mo.

Pneumonia: A Clinical Study. Reynold W. Wilcox, M.D., New York.

Consumption a Curable Disease. Addison W. Baird, M.D., New York.

Thirty Pictures of Tuberculosis: Communicable, Preventable, Curable. *Ibid.*

Treatment of Chronic Diseases by Physical Therapeutics. Albert C. Geyser, M.D., New York.

Epithelial Cystoma of the Conjunctiva. Edward L. Oatman, M.D., New York.

Nervous Exhaustion. Amos J. Givens, M.D., Stamford Hall, Stamford, Conn.

The Present Status of Iron Therapy. Reynold W. Wilcox, M.D., New York.

Intestinal Fermentation. Robert T. Morris, M.D., New York.

Ovarian Grafting. *Ibid.*

Clinical Lecture on the Treatment of Gonorrhœa. H. M. Christian, M.D., Philadelphia, Pa.

Contribution to the Prophylaxis of Venereal Diseases. G. Morgan Muren, M.D., Brooklyn, N. Y.

Pulmonary Malingering. W. T. English, M.D., Pittsburg, Pa.

Immunization from Hog Cholera. D. E. Salmon, D.V.M. Circular No. 43, Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C.

County and Municipal Law Reports. Municipal and Sanitary Record, Glasgow, Scotland.

Contribution el Estudio de la Escarlatina en la Habana. Dr. Mario G. Lebredo, Habana, Cuba.

The Susceptibility of the Negro to Tuberculosis. Thomas D. Coleman, M.D., Augusta, Ga.

## CONTEMPORARY LITERATURE.

Panama Canal—The Problem of Sanitation.—"Sanitary Conditions and Diseases Common to the Isthmus of Panama" were described by Dr. Herbert O. Shiffert, U. S. Navy, in our February number. How they are to be dealt with is pretty clearly indicated by an article on "The Panama Commission and Its Work," in the April number of the "American Monthly Review of Reviews," by Mr. Walter Wellman. "In fact," he says, "preliminary investigations in this line have already been made. The commission will send to the Isthmus Col. W. C. Gorgas, the yel-

low fever expert of the army, who has done such excellent work in Cuba. He will study the local situation and prepare comprehensive plans for sanitation of the canal zone and of the city of Panama itself. Sewerage and drainage systems, and the introduction of an adequate supply of pure water, are held as imperative needs, no matter how much they may cost. Yellow fever is the plague most feared, but by improved sanitation and a thorough system of inspection, with occasional quarantine against La Guayra and other fever ports near by, there is little doubt that the health conditions among the many thousands of workmen who will soon be on the Isthmus may be made comparatively satisfactory. General Davis told a Congressional committee, a few days ago, that he thought the Isthmus could be made as healthful as Havana and other tropical cities, and that the Americans who go there need not suffer serious inconvenience if they only take care of themselves.

Dr. Spratling, Brigade Surgeon, who has been on the Isthmus with the American Marines, reports that there has not been a case of yellow fever, malaria, or any other disease peculiar to the region among his men, and he attributes their immunity largely to the fact that they drink none but distilled water. He says the general health conditions along the canal route are very much better than they are generally supposed to be. White men who have been on the Isthmus many years say that they have no trouble with fevers, but find it necessary to take good care of themselves. All the laborers now employed by the French company—four or five hundred in number—are Jamaica negroes, and their health is fairly good, considering their habits.

### MRS. EDDY'S LOGIC.

Disease is a condition of matter, and is, therefore, an illusion; and the cure for it is the removal of the illusion. Therapeutics, evidently, is only secondary; and an attack in that direction to be effective must be aimed back at the philosophy. For Christian Science *therapeutics* is the truth if Christian Science *philosophy* is the truth; indeed, if Mrs. Eddy's premises be correct, her conclusion is the only consistent one. Fundamentally, Christian Science is a philosophy of Evil based on a philosophy of Knowledge, and its cure of disease is only incidental, even though identified in the popular mind with the system itself.

Mrs. Eddy's treatment of Evil—manifesting itself in the favorite trio: sin, sickness, death—is equally unsatisfactory from the

philosopher's point of view. The explanation of each is its non-existence: the origin of the illusion is simply neglected. Here, for example, is a man from whom you have removed the heart. He is dead, according to our ignorant and loose use of the word. "No," says Mrs. Eddy, "that statement shows a subjective illusion." "Whence did this illusion arise?" I ask. "From custom," is the reply; "men have learned to associate the supposed absence of a non-existent heart with the illusion death." "But," I say, "back in primitive times, before there were customs or majority opinions, before men had learned to connect the heart with life at all, what started the illusion death?" And there is absolute and ridiculous silence. She has done nothing more, you see, than define death—and the same holds true of sickness—in an unusual way; but incapable of a large vision, and ignorant of the distinction between proximate and ultimate causes, she persuades herself that she has really explained the mystery.—John W. Churchman, in the April "Atlantic."

THE CONTINUOUS EMISSION OF LIGHT AND HEAT BY RADIO-ACTIVE SUBSTANCES.

After learning that the radio-active substances, uranium, thorium and radium are, for some reason or other continuously projecting with enormous velocities two kinds of particles, the *alpha* and the *beta* particles, one is not surprised to find that these substances maintain a temperature above the temperature of the surrounding atmosphere. This has been proved experimentally only for radium, which was found last year, by M. Curie and M. Laborde, to remain permanently at a temperature between one and two degrees above that of its surroundings, and to give out for each grain of weight enough heat per hour to raise a hundred grams of water through one degree. Since radium radiates more than a million times more actively than either of the other substances, it is not likely that any one will ever be able to show experimentally that uranium and thorium also maintain a temperature above that of their surroundings. Nevertheless, the same causes which operate to hold up the temperature of radium, operate also to hold up the temperature of both the other radio-active substances, the only difference being one of degree. Hence it is probable that all radio-active substances are continuously emitting, in a greater or less degree, heat energy. This is not surprising in view of the conclusion that such substances are continuously projecting particles with enormous velocities, for if

those particles are projected from all the molecules of the active substance, it would be expected that the temperature of the mass of the substance would rise under this unceasing internal bombardment. But whence comes this energy which is represented in the projected particles, and of which this heat and light are the ultimate manifestation?—From "Recent Discoveries in Radiation and Their Significance," by Prof. R. A. Milliken, April "Popular Science Monthly."

### THE SOUL?—ELECTRICITY TRANSFORMED.

Electricity is *not* matter. It is a *substance,* an element, capable of being changed into another element, as has been demonstrated by eminent English scientists. It pervades the whole system of created things, the air, the sea, the land, objects organic and inorganic, animate and inanimate, animals, plants, marine forms, insects and all the rest, manifesting itself transcendently in the lightning and in the aurora borealis, and extending beyond the confines of the universe into the unknown realm of the infinite. Matter rots, decays, perishes, but electricity is imperishable.

Hitherto the Creator has manifested Himself to mankind through material objects, because man is "of the earth earthly," and perceives with his physical senses. In his spiritual existence his faculties will be different, and he will see marvelous phenomena which are not perceptible now. Christ has promised this. Electricity is the connecting link between the material and the immaterial. It is the most potent, subtle, and mysterious of all palpable and impalpable media. Our carnal bodies are already charged with it: then why may not our spiritual bodies or soul-envelopes be composed of it entirely? "As the lightning cometh out of the east and shineth unto the west, even so shall the coming of the Son of Man be" (Matt., xxiv, 23).—Charles Hallock, in "The Open Court," for April.

### GREAT WOMEN PIONEERS.

History has fully recorded the deeds of the men who have laid the foundations of this nation in the Western wilderness; but the women who shared with the men pioneers the dangers and hardships of the frontier have received little notice from either historians or novelists. A great deal of light is thrown upon the Great Women of Pioneer Times in a series of articles that is appearing in "The Delineator." The subject in the May number is Catherine Sevier. This remarkable woman took an important part in many of the stirring events of the times, and exerted a

powerful influence upon all with whom she came in contact. As the wife of an equally remarkable man she became the first lady in the "Free State of Franklin," and afterward the first occupant of the Gubernatorial Mansion of Tennessee.

THE LIBRARIANS OF NEW YORK STATE recently took a vote as to the best 50 books for a village library, among the 7,865 books published in America last year. Six more were thrown in for good measure, and of the 56 books selected, 14, or 25 per cent. were published by The Macmillan Company. The books selected are: "The Call of the Wild," by Mr. Jack London; Mr. Morley's "Life of Gladstone"; "A Woman's Hardy Garden," by Mrs. Helena Rutherfurd Ely; "The Heart of Rome," by Mr. F. Marion Crawford; "The Social Unrest," by Mr. John Graham Brooks; "Two Centuries of Costume in America," by Mrs. Alice Morse Earle; "A Descriptive Guide to the Best Fiction," by Mr. Ernest A. Baker; "The Mettle of the Pasture," by Mr. James Lane Allen; Mr. Sidney Lee's "Dictionary of National Biography"; "Queen Victoria: A Biography," by Mr. Sidney Lee; "Old Quebec: The Fortress of New France," by Sir Gilbert Parker and Mr. Claude G. Bryan; "People of the Whirlpool," by the Author of "The Garden of a Commuter's Wife"; "Studies in Contemporary Biography," by Mr. James Bryce, and "The Care of a House," by M. T. M. Clark.

THE VAUDEVILLE.

Few persons realize the magnitude of conducting a single vaudeville, but the manager of a circuit such as the Proctor Theaters, consisting of seven houses in four different cities, has at his command an army of no small proportions. Those actually employed in the stage performances average forty each week. To this must be added the property men, scene shifters, clearers, electricians, stage and assistant stage managers. There are from thirty to forty men throughout the auditorium to cater to the comfort and convenience of the patrons, possibly ten more employed as door-keepers and ticket-sellers, a business staff of from five to eight, and an orchestra of ten players. In addition to this there are three complete shifts of scenic artists employed on the paint bridges at the Fifth Avenue Theater, Fifty-eighth Street and One Hundred and Twenty-fifth Street theaters, a staff of fifty house painters and decorators, who are constantly going over the houses and keeping them in good condition; a dozen charwomen, and a host of advertising men, booking agents and others. These are all necessary in the presentation of a complete and per-

fect performance, and yet Mr. Proctor finds it profitable to present expensive bills at trifling admission fees, while paying the salaries of more than twelve hundred employees each week.

---

PRELIMINARY PROGRAM AMERICAN CLIMATOLOGICAL ASSOCIATION.

The twenty-first annual meeting of the Association will be held in the Banquet Room of the Aldine Hotel, Chestnut street, above Nineteenth, Philadelphia, on June 2, 3 and 4, 1904.

The Council recommends that papers should not exceed fifteen minutes in reading, and that members in discussion be limited to five minutes, unless special permission be granted; also, that members have duplicate copies of their papers, so that one copy may be deposited with the secretary immediately after being read.

The headquarters of the Association will be at the Aldine Hotel, where the morning and afternoon sessions of the first day, Thursday, June 2, will be held. At the close of the afternoon session there will be a trolley excursion to Willow Grove, where a collation will be served, and later there will be an opportunity of enjoying the music.

The sessions of Friday, June 3, will be held at Houston Hall, of the University of Pennsylvania, when a midday luncheon will be tendered by the Provost and Trustees of the University.

The annual dinner of the Association will be held at 7.30 p. m., at the Aldine Hotel. The contribution to the dinner has been placed at five dollars.

---

NEW YORK AT WORLD'S FAIR.

The Empire State's pavilion at the World's Fair is peculiarly appropriate in commemorating the event on which the holding of the Exposition is based. The building is patterned after the University of Virginia, which was designed by Thomas Jefferson, during whose administration as President of the United States the territory comprising the Louisiana Purchase was acquired from France.

The building is on the State plaza with the Illinois and Iowa buildings for neighbors. The land falls off about 25 feet on the easterly end, and it has been taken advantage of by the architect to place a large fountain in the façade of the podium or terrace on which the building stands. This fountain typifies the Mississippi River in the form of a river god controlling the sea.

The building proper stands on a podium enriched with balustrades and vases. It is colonial in design and detail, and is surmounted with a low dome. One enters a large hall, 60 feet square, running the full height, arched and domed in the Roman manner, with galleries around the second story. To the right is a large assembly hall, 50x60 feet, to be used on State occasions, but it is really made a part of the grand hall. Small assembly rooms are included in the end of this wing. To the left of the hall are waiting and writing rooms, with retiring rooms and toilets for visitors. The whole first floor is as one room, however, and with its colonnades and arches will present interesting vistas.

The second floor contains suitable rooms for the commission, the secretary and general officers. The halls and all of the appointments are most generous, and are to be treated in a simple, quiet manner. No effort will be made in the way of elaborate decorations, but the beauty of the whole will depend entirely on carefully studied detail and correct architectural lines. In the large hall, it is proposed to place four large paintings in the lunettes, symbolizing the four original ownerships—the Indians in one, Spanish, French and Americans in the others. The four pendentives will be filled with pictures emblematic of the four original States included in the purchase, and their products and manufactures. The external sculpture, while not expensive, will receive careful attention. The fountain, already described, and the four quadriga flanking the dome, will be modeled by representative sculptors, and will typify the march of progress. The building will be of staff.

One fact in connection with the original purchase will receive recognition in the way of tablets and inscriptions, and that is that Robert R. Livingston, of New York, who was Minister to France under Jefferson, negotiated the treaty with Napoleon for the Louisiana Purchase. He was empowered to negotiate for the mouth of the Mississippi River, and from this the purchase of the whole tract followed. Monroe, afterward President, resigned as Governor of Virginia to carry special instructions from Jefferson to Livingston in regard to the detail of the transfer.

Other details of interest will be the embodiment of the capitals designed by Jefferson with Indian corn as a motive. The grounds are to be made particularly interesting by New York nurserymen, who will exhibit the many varieties of flowers and shrubs grown in the State, and no detail is to be left unstudied to make the whole an artistic success.

# THE SANITARIAN.

## JUNE, 1904.

NUMBER 415.

## METHODS AND INTERPRETATION OF WATER ANALYSIS.

BY A. ROBIN, M. D.,

Bacteriologist to City Water Department, Wilmington, Del.

The average consumer judges of the quality of the drinking water by means of his special senses of sight, smell and taste. Water which is turbid or emits a disagreeable odor is unreservedly condemned, while clear, sparkling water free from odor is just as unqualifiedly pronounced "pure." Those of us who are familiar with the history of typhoid epidemics and have had opportunity to examine drinking waters by means of special methods know how fallacious such a crude judgment is. Water that is clear and sparkling may contain the germs of typhoid fever or may be polluted with sewage which, in the course of decomposition, gave rise to carbonic acid. It takes many billions of bacteria to render a glass of water perceptibly turbid, and it requires considerable fresh sewage to impart to it a fecal odor. On the other hand, a turbid water, although objectionable from an esthetic point of view, may be entirely wholesome, and a disagreeable odor may be due to inoffensive vegetable compounds or harmless algæ.

This evident inability to form a ready judgment of the quality of a drinking water has led the sanitarian to seek the aid of the chemist, who, it was supposed, could readily detect by means of chemical analysis the injurious substances in the water under suspicion. However, it soon became evident that a chemical

analysis of water for sanitary purposes differs essentially from any other kind of analysis which the chemist may be called upon to make. The finding of arsenic or some poisonous alkaloid in a suspected fluid is decisive, and a report on such finding is merely a statement of fact. In the analysis of water, on the other hand, the findings are purely relative and must be properly interpreted before they can be of any value. A drinking water, if I may borrow the legal phraseology, is indicted on circumstantial evidence, and it depends on the erudition and ability of the chemist to so interpret and connect the evidence as to make out a clear case for or against the suspected water.

The object of a chemical analysis of water is to discover whether or not pollution with objectionable organic impurities has taken place. By "objectionable organic impurities" we understand those which are from human or animal sources and are capable of conveying the germs of disease. In other words, we look principally for fecal contamination, inasmuch as the germs of typhoid fever, cholera, dysentery and other intestinal disorders are excreted with the feces and together with the feces gain access to the water. By itself, organic matter in the minute quantities in which it is present in water, is not injurious to health, even if derived from sewage. It is only because this organic matter may be the carrier of disease germs that it becomes a matter of serious consideration. Therefore, organic matter derived from plants or vegetables removed from the possibility of infection with disease-producing bacteria has no significance from a sanitary standpoint, and its presence in drinking water in no way renders it unwholesome.

It is thus evident that the aim of the sanitary chemist is to discover, first, the presence of organic matter, which would indicate pollution, and, second, to determine the source of this organic matter. How well these two requirements are fulfilled by a chemical analysis will be made clear later.

Dead organic matter in water, as elsewhere, is not in a state of stability. Through the agency of certain bacteria, in the presence of oxygen, it continuously undergoes material changes, becoming resolved into simpler inorganic compounds. The nitrogenous substances are converted into ammonia, and the latter into nitrous and finally nitric acid, the two acids combining with bases usually present to form nitrites and nitrates, respectively. These changes may be best illustrated by the following scheme:

$$\text{Organic matter}\begin{cases}\text{Carbon—Carbon dioxide.}\\ \text{Hydrogen}\\ \text{Nitrogen}\end{cases}\begin{cases}\text{Ammonia}\\ \text{Nitrous acid (Nitrites)}\\ \text{Water}\end{cases}\begin{cases}\text{Nitric acid (Nitrates).}\end{cases}$$

This process, may it be remarked in passing, is a beneficial one, since by its means purification of polluted water is accomplished and the decaying organic matter converted into useful plant food.

These changes, under favorable conditions, take place incessantly so long as there is a supply of dead organic matter and the necessary bacteria are present. Therefore, the amount of organic matter in water represents that portion which has not yet undergone disintegration—the organic nitrogen or so-called albuminoid ammonia—as well as the various intermediary products of the portion which has undergone or is undergoing disintegration—free ammonia, nitrites and nitrates. The quantitative relation of these products of oxidation to each other as well as to the unoxidized nitrogenous matter will depend on the original amount of the organic matter and the rapidity with which oxidation has taken place. Therefore, an analysis which discloses these various stages of oxidation reveals also not only the presence but the retrogressive course of the organic matter. Given a water containing relatively large amounts of albuminoid and free ammonia, together with nitrites and nitrates, the indications would be that such water contains a large amount of organic matter in a state of incomplete oxidation; in other words, the contamination is recent. On the other hand, the presence of nitrates, in the absence of nitrites, with only small amounts of free and albuminoid ammonia, would indicate complete oxidation or a previous pollution. It goes without saying that pure water should contain only traces of albuminoid and free ammonia and should be free from nitrites and nitrates, the latter, if in small quantity, being rapidly appropriated by the water plants. It is to be expected that in deep wells removed from the possibility of pollution, the water will contain very slight amounts of ammonia and no nitrites or nitrates, or mere traces, although free ammonia may sometimes be present in large amounts as a result of oxidation of vegetable matter or nitrates by ferric oxide.

In addition to organic matter, water contains various salts, the most important and constant of which is sodium chloride, or, occasionally, magnesium and calcium chloride. These chlorides are derived from the sea or geological formations rich in salts. The

amount of chlorides will vary with the natural source and remains fairly constant. However, when the water is polluted with sewage or household refuse the chlorides will increase in proportion to the degree and nature of the pollution, and this increase serves as a reliable indication of past or present pollution. This index, however, is of value only when the normal chlorine contents of the water in question or of waters in the immediate neighborhood is known.

On the foregoing considerations are based the various methods employed in the chemical analysis of water. As these methods are fully described in books on the subject, I shall not dwell on them here, but will mention the modifications which I found useful in my work. For the determination of turbidity, free and albuminoid ammonia, nitrates, nitrites and iron I employ Jackson's standards, which are used in the Mt. Prospect Laboratory, Brooklyn, and are described by Mr. Jackson in the *Technology Quarterly,* Vol. XIII, No. 4, 1900. A constant use of the standards convinced me of their accuracy and convenience. They offer the great advantage of being always on hand and presenting a uniformity of composition (color) not attainable when the standards are made up extemporaneously. However, in the determination of turbidity I depart somewhat from Mr. Jackson's recommendations and make use of 100 c.c. XX tincture bottles, glass stoppered (W. T. & Co.) instead of 100 c.c. Nessler tubes. I found that by means of these bottles it is possible to determine the turbidity with much greater accuracy. In determining nitrates and nitrites I treat 200 c.c. of the water with an excess of precipitated and washed aluminum hydrate, decanting the clear supernatant fluid. This brings about complete decolorization of the water, a condition most desirable in the case of surface waters which are frequently colored, the color interfering with the proper determination of nitrites and nitrates. I do not determine the loss on ignition, for the reason that it is not a reliable method of determining the organic matter in the residue. When the latter is subjected to heat, the nitrates are decomposed and the chlorides volatilized to a considerable extent, while some salts retain the water of crystallization despite the heating. The loss on ignition, therefore, does not represent the amount of organic matter burned. I do, however, heat the residue, but only to observe the charring on ignition. The degree of charring of the residue does indicate, roughly, of course, the amount of organic matter.

UNRELIABILITY OF CHEMICAL DATA.

There are a number of serious objections to the data obtained by a chemical analysis. (1) Excessive free ammonia in ground waters may be the result, as has been mentioned, of the oxidizing action of iron or other metals on the nitrates present, while in surface waters it may be produced by the action of a fungus Crenothrix (Brown). (2) The nitrites found in deep-well water may be the result of the reduction of nitrates normally present in the soil, and, consequently, in no way represent organic pollution. One of the chief objections, however, is that a chemical analysis does not reveal the nature of the organic matter, whether of vegetable or animal origin. Admitting that a certain water contains an excess of organic matter, the question arises, Does this organic matter represent harmless vegetables or dangerous sewage? The chemist cannot answer this question with a certainty which would preclude a "reasonable doubt." Yet a water contaminated even with large amounts of vegetable matter, while not the best kind of water to drink, is, nevertheless, free from danger. It is true, that if the ammonia on distillation is given off rapidly and the nitrites and chlorine are excessive, the indications that the organic matter is derived from sewage are reasonably clear, but the rapidity with which ammonia even from animal matter is given off is only comparative and there is no way of gauging it, while the excessive amount of chlorine as compared with the normal chlorine standard of that particular locality presupposes a previous study of unpolluted waters which is seldom made and which often cannot be made.

The other objection, one of a much more serious nature, is that water may be organically pure and yet contain germs of disease. Instances are cited by a number of authors showing that water-supplies pronounced on chemical evidence to be above suspicion have been proved to have caused serious epidemics of typhoid fever or dysentery. Thus Dr. Thresh, in his well-known book on "Water and Water Supplies," cites a number of such instances, a few of which I will quote.

The water from the River Ouse, below where it receives the sewage of Buckingham, to which an epidemic of typhoid fever was attributed, was analyzed by the public analyst, who reported that it "does not appear from the analysis to contain sewage matter."

The Beverley water-supply, which became polluted with infected sewage from an asylum, giving rise to a typhoid epidemic,

was pronounced by the chemist to be "of a very high degree of purity, and eminently suitable for drinking and domestic purposes."

Analysis of water from the sewage-polluted Trent showed that "there is no evidence of the product of sewage contamination."

The well-water supplying Houghton-le-Spring became contaminated with sewage from a farm, causing a sudden outbreak of typhoid fever. The chemist who analyzed the water reported that "this water is very free from indications of organic impurity. . . . It is a good water for drinking purposes."

The reason for this evident failure on the part of the chemist to detect dangerous pollution is not difficult to find. A generally pure water may become contaminated with an amount of sewage too small to give evidence of its presence when polluted with several millions of gallons of water, yet this small amount of sewage may contain numerous specific germs, the presence of which cannot be detected by a chemical analysis. Again, the sewage may have undergone complete oxidation and the end products taken up by the plants, leaving no perceptible evidence of the pollution, while many of the specific germs which may have been present in the original sewage remain viable and capable of causing disease.

Before leaving this phase of the subject, I wish to point out the value of chemical analysis in comparing different waters in the same locality or a certain water at different times. In this connection, the data obtained by a chemical analysis are both accurate and valuable. Also in the study of filtration, especially of the slow-sand type, chemical analysis of the raw water and effluent made from time to time furnishes valuable evidence of the efficiency of the filter in removing turbidity and color, and bringing about the nitrification of organic matter which is the essential feature of this process of water-purification.

## BACTERIOLOGICAL EXAMINATION.

With the advent of bacteriology, and especially after the introduction of Koch's plate method of isolation of bacteria, the hope of the sanitarian had been revived. It was supposed that at last we had a method by means of which we might detect the specific causes of disease in water, and thus place the examination of water on the same certain basis as the detection of poisons. With the knowledge that typhoid fever is usually caused by the drinking water and after the discovery by Koch that cholera is of similar

origin, it was expected that the typhoid bacilli and the cholera spirilla could be detected in the suspected water. Unfortunately, disappointment followed all attempts in this direction. It soon became evident that while a certain water has been the cause of either a cholera or typhoid epidemic, as established by all evidence at hand, neither the cholera spirillum nor the typhoid bacillus could be detected in such waters. The cause for this failure was found in the great predominance of water bacteria which overgrow and obscure the few specific parasites, rendering their discovery impossible. The effort may be compared to looking for a needle in a haystack. While not entirely abandoned, the search for specific microorganisms has not been made the object of routine examinations; and until some satisfactory method is devised by which the saprophytic bacteria may be entirely eliminated and the number of the specific microorganisms increased so as to have them present in very small quantities of the water, the bacteriologist must depend upon other data upon which a conclusion as to the quality of the water may be reasonably based. It was thought for a time that the number of bacteria in the water could serve as an index of pollution, and a number of standards of bacterial purity have been suggested by various authorities. Thus, Koch considers 100 bacteria per cubic centimetre as the safe limit for drinking water; Miquel raises the standard to 1,000; Crookshank agrees with this standard, while Macé and Migula claim that 250 to 500 bacteria is the highest limit for a good drinking water. These or any other arbitrary standards based on mere number of bacteria are as fallacious as the "standards" proposed from time to time for ammonias, nitrites, nitrates, etc. In the first place, the number of bacteria in water will vary greatly with the medium, the reaction of the medium, the length of time the colonies are allowed to develop, dilution, etc., as may be seen by the following data:

(1) *Time of Plating.*—It makes considerable difference whether the water is plated immediately upon collection or is allowed to stand for some time before plating. At room temperature, the bacteria multiply enormously, so that if the plating is done several hours after collection of the sample, an originally pure water may be condemned on the bacterial count. On the other hand, if packed in ice, the bacteria decrease in number sometimes to a very marked degree. This is clearly shown by Jordan and Irons (*Trans. Am. Pub. H. Ass.*, Vol. XXV, 1899) in the following table:

| | A. | | B. | | C. | |
|---|---|---|---|---|---|---|
| | Temp. C°. | No. Bacteria per 1 c.c. | Temp. C°. | No. Bacteria per 1 c.c. | Temp. C°. | No. Bacteria per 1 c.c. |
| Immediately after collection ..... | 20.75 | 176 | 23.5 | 950,000 | 29 | 385,000 |
| After 3 hours .... | 9 | 123 | 9 | 510,000 | 29 | ..... |
| " 6 " ..... | 6 | 93 | 6 | 90,000 | ( 4 hrs.) 66 | 130,000 |
| " 11 " ..... | 8 | 87 | 6 | 430,000 | ( 8 hrs.) 2 | 210,000 |
| " 24 " ..... | 7 | 72 | 7 | 380,000 | (22 hrs.) 6 | 136,000 |
| " 32 " ..... | 8 | 46 | 8 | 340,000 | ..... | ..... |
| " 49 " ..... | 4 | 27 | 2.5 | 429,000 | (46 hrs.) 8 | 305,000 |
| " 72 " ..... | 1 | 39 | 3.5 | 480,000 | | |

This marked decrease the authors ascribe to the effect of sudden chilling.

(2) *Dilution.*—It is by no means a matter of indifference whether the water is plated as it is or diluted; also the degrees of the dilution employed has an effect on the number of bacteria per 1 c.c., as shown by Jordan and Irons (*l.c.*) in the following table:

| A | | B | |
|---|---|---|---|
| Undiluted ..... | 218 | Diluted 1-1,000 ..... | 844,000 |
| Diluted 1-10 ..... | 470 | Diluted 1-10,000 .... | 2,630,000 |
| | | Diluted 1-100,000 ... | 4,300,000 |
| C | | D | |
| Undiluted ..... | 1,500 | Diluted 1-1,000 ..... | 479,000 |
| Diluted 1-10 ..... | 4,340 | Diluted 1-10,000 .... | 1,120,000 |
| Diluted 1-100 ..... | 8,800 | Diluted 1-100,000 ... | 1,300,000 |

This variation in number, dependent on dilution, is due to the obscuration of colonies through inhibition of growth when undiluted water is plated. In the matter of dilutions, the number and vigor of shakes to which the vessel is subjected before the 1 c.c. is withdrawn affects the numerical results, also whether distilled or tap-water is used as a diluent. The method I employ is to have on hand 50 and 100 c.c. graduated flasks half-full of tap water. These are sterilized in the autoclave. One cubic centimetre of the water is added to either the 50 or 100 c.c flask, and contents subjected to ten vigorous shakes. The flask is then filled to the mark with sterile tap-water and inverted twenty-five times. If higher dilutions are required portions of diluted water are similarly treated.

(3) *Composition of Media.*—That the constituents, reaction and character of the medium influence the number of bacteria to a very great extent is a well-known fact attested by numerous experimental data. The marked variations in the number of bacteria in the same water plated on different media is shown by the following data obtained by Jordan and Irons *(l. c.)*:

(1) SURFACE WATER (LAKE MICHIGAN).

| | *Reaction (Fuller's scale).* | *No. of Colonies. Eight days.* |
|---|---|---|
| Ordinary Witte's peptone agar ..... | +10 | 50 |
| Ordinary Witte's peptone gelatin ... | +10 | 130 |
| Somatose gelatin (no broth) ..... | 0 | 110 |
| Nährstoff Heyden gelatin (no broth) | 0 | 460 |
| Somatose agar (no broth) ..... | 0 | 470 |
| Nährstoff Heyden agar (no broth). | 0 | 570 |

(2) SURFACE WATER (MISSISSIPPI RIVER).

| | *Reaction. (Fuller's scale).* | *No. of Colonies. Seven days.* |
|---|---|---|
| Ordinary Witte's peptone agar .... | +10 | 206 |
| Somatose agar (no broth)..... | 0 | 543 |
| Nährstoff Heyden agar (no broth) . | 0 | 612 |

(3) SEWAGE (DILUTED $\frac{1}{10000}$).

| | *Reaction. (Fuller's scale).* | *No. of Colonies. Ten days.* |
|---|---|---|
| Witte's peptone agar ..... | +10 | 127<br>127 |
| Somatose agar ..... | 0 | 198 |
| Nährstoff Heyden agar..... | 0 | 355<br>342 |

(4) GROUND WATER (ARTESIAN WELL).

| | *Reaction. (Fuller's scale).* | *No. of Colonies. Nine days.* |
|---|---|---|
| Ordinary Witte's peptone agar ..... | +10 | 15 |
| Ordinary Witte's peptone gelatin ... | +10 | 21 |
| Nährstoff Heyden gelatin ..... | 0 | 700 |
| Somatose agar..... | 0 | 584 |
| Nährstoff Heyden agar ..... | 0 | 920 |

Equally marked variations were obtained by Gage and Phelps *(Centralbl. f. Bakt., Paras. u. Infek.*, Abt. 1, Bd. xxxii, No. 12, 1902; *Trans. of the Am. Pub. H. Ass. of the Twenty-ninth Annual Meeting*, 1901). They experimented with thirteen different media and various waters. Fuller and Johnson *(Trans. Am. Pub. H. Ass.*, Vol. XXV, 1899) experimented with a medium composed of meat infusion and 12 per cent. gelatin, omitting the peptone and salt, with the following comparative results:

NUMBER OF BACTERIA PER CUBIC CENTIMETRE.

| Reaction (per cent). | Regular Nutrient Gelatin. | Meat Infusion and Gelatin. |
|---|---|---|
| 0.0 | 110 | 200 |
| 0.5 | 110 | 210 |
| 1.0 | 120 | 100 |
| 1.5 | 80 | 130 |
| 2.0 | 75 | 70 |

This table also shows the effect of the reaction. The optimum reaction in this case was + 0.5 for the meat infusion gelatin and + 1.0 for the regular nutrient gelatin. The optimum reaction, however, will differ with different waters. Generally + 10 to + 15 (Fuller's scale) is recommended. In my own experimental work I found equally striking variations as shown in the table below.

The gelatins Nos. 1 and 9 were prepared according to the directions given by the Laboratory Committee of the American Public Health Association on Standard Methods. Gelatin No. 2 was prepared in accordance with the same method, with the exception that Armour's extract of beef was used instead of meat. The reaction in each case was + 15. An extended series of observations on the Gelatins Nos. 1 and 2 showed that the latter invariably gave twice the number of bacteria.

(4) *Condition of Cultivation.*—An atmosphere saturated with moisture, as shown by Whipple *(Technology Quarterly*, Vol. XII, No. 4, December, 1899), favors a greater development of bacteria. The temperature also plays an important role, since fewer bacteria will develop at 10° C. than at 20° C. The difficulty of maintaining a constant low temperature is well known.

(5) *Length of Cultivation.*—The day on which the colonies are counted influences the numerical results, perhaps, more than any

other factor. Given a certain medium and environment, some species of bacteria will develop more rapidly than others. I could

| Series. | Medium. | Day of Count. | No. Bacteria per 1 c.c. |
|---|---|---|---|
| A | Gelatin No. 1 | 2 | 3,000 |
| | Gelatin No. 2 | 2 | 8,000 |
| | Nährstoff Heyden agar | 10 | 55,000 |
| B | Gelatin No. 1 | 2 | 10,000 |
| | Gelatin No. 2 | 2 | 24,000 |
| | Nährstoff Heyden agar | 10 | 30,000 |
| C | Gelatin No. 2 | 2 | 87,000 |
| | Nährstoff Heyden agar | 10 | 172,000 |
| D | Gelatin No. 2 | 2 | 70,000 |
| | Nährstoff Heyden agar | 10 | 108,000 |
| E | Gelatin No. 2 | 2 | 8,000 |
| | Gelatin No. 2 | 2 | 14,000 |
| | Nährstoff Heyden agar | 10 | 53,500 |
| F | Gelatin No. 1 | 2 | 2,350 |
| | Gelatin No. 2 | 2 | 4,800 |
| | Gelatin No. 9 | 2 | 2,150 |
| | Nährstoff Heyden agar | 10 | 8,850 |
| G | Gelatin No. 1 | 2 | 2,050 |
| | Gelatin No. 9 | 2 | 4,750 |
| | Nährstoff Heyden agar | 10 | 34,500 |

illustrate this fact by numerous instances, but will cite only a few from my own records:

| | | |
|---|---|---|
| Gelatin plates, | third day count | 3,050 |
| " " | fourth day count | 5,350 |
| " " | third day count | 4,750 |
| " " | fourth day count | 12,150 |
| " " | second day count | 8,000 |
| " " | third day count | 50,000 |

| | | | |
|---|---|---|---|
| Gelatin plates, | | second day count | 2,350 |
| " | " | sixth day count | 4,500 |
| " | " | second day count | 4,800 |
| " | " | sixth day count | 13,150 |
| " | " | second day count | 2,150 |
| " | " | sixth day count | 7,350 |
| " | " | second day count | 2,050 |
| " | " | sixth day count | 11,000 |

The committee of the American Public Health Association on Standard Laboratory Methods recommends that plates be counted on the second day. The difficulty, however, of establishing a uniform practice lies in the variability of saprophytic bacterial species not only in different waters, but in the same water at different times. Thus a certain water may contain species which develop rapidly at 20° C., while another water, or the same at another time, may contain species which develop slowly at that temperature. As a matter of fact, waters containing large numbers of bacteria whose optimum temperature is 37° C. (fecal and other pathogenic organisms) will show a lower count, owing to the fact that these species develop slowly at 20° C., and the colonies could be readily overlooked on the second day count. In the case of testing the efficiency of a filter, the difficulty is augmented by the fact that the raw water does not contain, in point of numbers, the same species as does the effluent. On the other hand, prolonging the final count to the third or fourth day endangers the integrity of the gelatin plate, which often becomes liquefied at the end of the second day, unless kept at a temperature lower than 20° C., when the error, occasioned by a still lower temperature, is introduced.

The investigations of others, as well as my own, demonstrate conclusively that Nährstoff Heyden agar permits the development of the maximum number of bacteria, very likely all the bacteria found in a given quantity of water. This medium, according to Hesse and Niedner, who were the first to suggest it *(Zeitschr. f. Hyg.,* Vol. XXIX, p. 454) is prepared as follows:

| | Per cent. |
|---|---|
| Agar-agar | 1.25 |
| Nährstoff Heyden | 0.75 |
| Distilled water | 98.00 |

The Nährstoff Heyden, which is an albumose, is dissolved in water, mixed with the agar and the whole boiled until the agar is completely dissolved. It may then be filtered through absorbent cotton. The medium requires no adjustment of reaction, nor any other manipulations which, in the case of other media, interfere with the uniform composition of the finished product. Nährstoff Heyden agar is of uniform composition, and offers the additional advantage that the colonies developing on it never spread nor grow so large as to obscure their smaller neighbors. The plates are usually counted on the ninth or tenth day, although the count may be made on the fifth or sixth day without any great error being introduced. The colonies developing on this medium are, as a rule, not characteristic, but chromogenesis is brought out remarkably well. A plate containing a number of chromogenic species looks like a field bedecked with early spring flowers. It is quite likely that this medium may prove of great use in the grouping of bacterial species according to chromogenesis.

But even if in Nährstoff Heyden agar we possess a medium which will show all the bacteria found in a given sample of water, we are still unable to pass definite judgment on its hygienic quality. After all, the number of bacteria in water indicates the presence of bacterial food, or organic matter, but does not reveal to us the nature of that organic food, whether of vegetable or animal origin. Therefore, the same objection that is raised against the chemical analysis of water pertains with almost equal force to the mere counting of the number of bacteria. To remedy this defect, bacteriologists introduced the presence or absence of B. coli communis, a normal resident of the intestinal tract of man and animals, as the criterion for the presence or absence of fecal pollution. The presence of the B. coli communis indicates the presence of feces, and the contamination with the latter makes it possible for the typhoid bacilli to be present. Consequently, the investigation of water supposed to have been the cause of a typhoid epidemic rests on the presence of the colon bacillus as the indirect but certain evidence. However, the mere presence of the colon bacillus, which is so widely spread in nature, is no certain indication of fecal pollution, unless the number of B. coli is large. Unfortunately, the methods for the enumeration of this microorganism are either too complicated for routine work or inaccurate; and, besides, bacteriologists are not quite agreed as to what constitutes a genuine B. coli communis, there being a number of species not found in feces which closely resemble it.

It would seem from the foregoing considerations that we possess no certain means of detecting dangerous pollution in cases in which a mere sanitary inspection does not make the source of the pollution evident (proximity of privy, discharge of sewage into the stream, etc.). Fortunately, however, this is not the case. While it is true that no single factor establishes definitely the character of the water under suspicion, a combination of factors with their proper grouping and interpretation is capable of forging a chain of evidence, placing the verdict "beyond a reasonable doubt." The procedure, which will yield satisfactory results, is as follows:

The water is subjected to a chemical analysis, and an adequate portion, 1 c.c. or a fraction of a cubic centimetre, plated in gelatin, Nährstoff Heyden agar, litmus lactose agar, carbolic acid lactose agar and neutral red lactose bouillon.* The carbolic acid lactose agar is made by the addition to 5 c.c. of the medium of 0.05 — 0.1 c.c. of Parietti's solution (hydrochloric acid 4 c.c., 5 per cent. carbolic acid solution 100 c.c.). The neutral red lactose bouillon is made by adding 10 c.c. of a 1 per cent. solution of neutral red to 1 litre of lactose bouillon (1 per cent.). The gelatin and Nährstoff Heyden plates are kept at 20° C., and the others at 37° C. The gelatin plates are counted at the end of two days, the Nährstoff Heyden agar plate at the end of nine days, the litmus lactose agar plate at the end of twenty-four hours and the carbolic acid lactose agar plate at the end of forty-eight hours.

*Interpretation of Results.*—By using these several media we aim to demonstrate: (1) The presence of organic pollution by the combined chemical analysis and bacterial count, the count on gelatin serving as a comparate with the counts obtained by other observers who have used gelatin, while the Nährstoff Heyden agar shows the total number of bacteria.

(2) The presence and number of bacteria which develop at 37° C. and the presence and number of red colonies which may be either B. coli communis, Houston's streptococcus or some other sewage organism producing acid. This information is furnished by the litmus lactose agar plate.

(3) The presence and number of bacteria which resist the addition of carbolic acid, as B. coli communis or some other equally resistant microorganism which could not be an ordinary water saprophyte. This is indicated by the carbolic acid lactose agar.

(4) The absence or possible presence of B. coli communis as in-

*The neutral red lactose bouillon was suggested by Dr. Stokes, of the Baltimore City Board of Health, at the meeting of the American Public Health Association, at Washington, D. C., 1903.

dicated by the production or non-production of gas and characteristic reaction with the neutral red dye.

Given a water which shows on chemical analysis organic pollution and which shows a large number of bacteria on gelatin and a considerable number of bacteria on the litmus lactose agar and Parietti's solution lactose agar plates together with red colonies on the former and production of gas plus characteristic reaction with the neutral red in the neutral-red lactose bouillon, such a water may be pronounced polluted with sewage, beyond a reasonable doubt.

The practical application of this method is illustrated in the following instance.

Water from the race carrying Brandywine water was examined with the following results (in 1 c.c.):

No. of bacteria on gelatin, second day count..... 1,000
No. of bacteria on Nährstoff agar, tenth day count ..... 9,000
No. of bacteria on litmus lactose agar, twenty-four hours.. 57
No. of red colonies (proved to be B. coli) ..... 8
Neutral red lactose bouillon (1 c.c. of water), typical reaction.

At the same time the water from the Cool Spring Reservoir, containing the same water, was examined and showed (in 1 c.c.):

No. of bacteria on gelatin, second day count..... 3,400
No. of bacteria on Nährstoff agar, tenth day count .....75,000
No. of bacteria on litmus lactose agar, twenty-four hours... 26
No. of bacteria on red colonies ..... 1
Neutral red lactose bouillon (1 c.c. of water) showed production of gas without characteristic change of color.

Subsequent study of the single red colony showed that it belonged to the proteus group.

At another time the race-water showed (in 1 c.c.):

No. of bacteria on gelatin ..... .....13,000
No. of bacteria on lactose litmus agar ..... 97
No. of red colonies (proved to be B. coli)..... 33
No. of bacteria on carbolized lactose agar ..... 46
Neutral-red lactose bouillon, typical reaction.

The water from the reservoir showed (in 1 c.c.):

| | |
|---|---|
| No. of bacteria on gelatin | 16,350 |
| No. of bacteria on lactose litmus agar | 37 |
| No. of red colonies (proved to be B. coli) | 7 |
| No. of bacteria on carbolized lactose agar | 37 |

Neutral-red lactose bouillon, typical reaction.

The Brandywine water is an extremely polluted stream, receiving the sewage from Coatesville and other places. The water in the reservoir receives but little sedimentation and is drawn near the bottom. We would expect, then, that the water from the reservoir would contain more saprophytic bacteria, while the race-water would contain more sewage organisms. This is admirably demonstrated by the above examinations. Yet, were we to depend on the bacterial count on gelatin alone, the reservoir-water would appear many times worse than the race-water. It is thus seen that by the proper combination of laboratory methods a definite and accurate conclusion may be reached, and it is also evident that in the examination of water reliance on any single method will lead to grave errors.—"American Journal of Pharmacy," March, 1904.

---

INTERNATIONAL PREVENTION OF EPIDEMICS.—From October 10 till the beginning of December, 1903, meetings were held in Paris for the purpose of devising the best means for the prevention of epidemics. The meetings had adopted the name of an "International Sanitary Conference." The first object was to agree upon a period of observation time in case of suspected plague. Up till now it had been deemed necessary to keep human beings and freight suspected of infection by plague bacilli under close observation for ten days. The conference arrived at the conclusion that the period can be reduced to five days. It was the aim of the conference on the one hand to find the best possible guaranty for the public health, but on the other hand to choose the measures for this purpose so as to interfere with international commerce in the least degree. For the present only the principles for prevention of plague and cholera were discussed. Before adjournment a motion was made to create an international health board as a permanent institution, having its main office in Paris.—Richard Guenther, Consul-General, Frankfort, Germany, December 22, 1903.

# RELATIVE PREVALENCE OF CONTAGIOUS DISEASES IN CHILDREN OF SCHOOL AGE.*

By P. H. BRYCE, M.A., M.D., Ottawa.
Late Secretary Provincial Board of Health of Ontario, Medical Inspector of Immigration and of the Department of Indian Affairs for the Dominion Government.

To everyone, but especially to those interested in the care of the children of our public schools, the subject of this paper becomes of extreme importance.

We naturally are all interested in the question of the prevention of contagious diseases among children at all ages, and in the measures by which such prevention may be accomplished; and it is natural to inquire how far schools are an aid or hindrance to such prevention. In one sense our schools are both an aid to the dissemination, and a means of preventing the spread of contagious disease. They do aid in the dissemination of disease in the same way that infection spreads among crowds everywhere; but they are a means of prevention through the educational influences which spread often from the children to parents, in these days of general compulsory school attendance and instruction in hygiene. Not until the organization of the Department of Health under the local government board in England was there any systematized study of the causative influences of the spread of infectious diseases; but since the appointment of Dr. John Simon, its first medical officer, investigations have been pushed in every direction. This is illustrated in the following quotation from Dr. Clifford Allbutt's "System of Medicine":

"The influence of school attendance on the diffusion of diphtheria was noted almost as soon as skilled inquiry into the circumstances of the disease was instituted. This was pointed out by Mr. W. H. Power in 1876, and in the following year I had an opportunity of studying the matter during a maintained prevalence of diphtheria at Coggeshall in Essex. It was found practical to divide the 928 children in the village into age-groups, and then to ascertain within each group the relative amount of diphtheria, in

*Read at Conference on School Hygiene and Education, February 2nd, 1904.

those who attended school and those who did not. Under three years of age school attendance was not found to have materially influenced the number of attacks, but in the age period three to twelve years, the incidence of the disease was not far from 50 per cent. greater on school attendants than on others: and in the age period twelve to fifteen years the school attendants suffered nearly three times more than those who were not at school."

A similar result in the instance of scarlet fever is illustrated in the Annual Report of Dr. Murphy, Medical Officer of Health of London, England, for 1893, in connection with 17,704 cases. Of these there were: 5,279 cases under five years of age; 6,727 cases under ten years of age; 3,187 cases under fifteen years of age; or but 29 per cent. of the cases were under five years of age.

Dr. Murphy illustrated the fact in another way by showing how the prevalence of this disease declined with the summer vacation. Thus, under three years the decrease was 1 per cent.; under three to twelve years the decrease was 26 per cent.; over thirteen years the decrease was 13 per cent. Increase in succeeding months: under three years, 4 per cent.; under three to thirteen years, 65 per cent; over thirteen years, 26 per cent.

Such is the experience of officers of health in England; but we are able to further illustrate the prevalence of infectious diseases from our own statistics.

During the first half of 1897, we had a serious prevalence of scarlet fever in Toronto. There were in all 1,138 cases and 63 deaths.

In the returns for May, and up to the 5th of the following June, there were in all 280 cases. Of these 198 attended school, or 70 per cent. of the whole were school children.

Such are the statistics of several outbreaks in which the details regarding cases have been available. We have, however, in addition to this, always available, the study of the death-returns from year to year for the whole province, and for particular municipalities.

The following table, from the Registrar-General's Report of 1900, supplies a number of interesting details, by which comparative results may be obtained. It gives the population of the province by age periods from nought to nineteen years, inclusive, by years for the first five-year period, and for the three succeeding quinquennia. It further gives the deaths for each of the several periods separately for scarlatina and for diphtheria.

| Age period ..... | 0-1 | 1-4 | 0-4 | 5-9 | 10-14 | 14-19 | 5-19 |
|---|---|---|---|---|---|---|---|
| Population ..... | 49,500 | 190,347 | 239,847 | 246,610 | 243,277 | 232,073 | ..... |
| Population percentage | 5% | 19.9% | 24.9% | 25.8% | 25.29% | 24.13% | ..... |
| Total deaths ..... | 7,163 | 1,989 | 9,152 | 803 | 563 | 923 | 2,289 |
| Total deaths from scarlatina ..... | 18 | 91 | 109 | 39 | 10 | 3 | 52 |
| Total deaths from diphtheria ..... | 77 | 330 | 407 | 205 | 66 | 29 | 300 |

From the columns of totals we find that for the first quinquennium, the deaths for both diseases together were 516, and for the period of five to twenty, the legal school period, they were 352, and in the five to nine period separately, 244.

It will be observed that the ratio of deaths in the first five years of life is about three times that in the second five-year period for scarlatina, and twice that for the same period in the case of diphtheria. We see in this an apparent disagreement from the foregoing statistics regarding the cases as reported in the different illustrated statistics given.

There is, however, a natural explanation for this in the fact that the percentage mortality of scarlatina in England in 14,000 cases between 1888 and 1893 under five years was 16.8 per cent., while that for the five to nine year period was 5.6 per cent.

In the same way diphtheria which, between 1895 and 1899, had 25.6 per cent. of deaths in cases of children under five years, had 14.6 per cent. of deaths for the five to nine period. Or there were 1,536, as compared with 695. What is very pleasing to notice, however, in this study of English statistics, is the relatively great decrease in recent years, not only of the total cases and total mortality, but also of the lessening percentage in school children, due doubtless to the closer inspection of school children, and the very general removal of first cases to the isolation hospitals.

To conclude this reference to the relative prevalence in the two periods through illustrative statistics, I shall take the returns of our two largest cities, Toronto and Ottawa, for 1903. Except for the first three months of the year, the following are the number of cases, as well as deaths, for the year 1903. We find that for the ten months from March to December, Toronto had 418 cases of scarlet fever and 62 deaths, and 806 cases of diphtheria, with 100 deaths. The deaths for the whole year by ages are seen in the following table:

| Ages..... | 0-1 | 1 | 2 | 3 | 4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 40-44 | 60-69 | Not given. | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Scarlet Fever.. | 4 | 7 | 12 | 14 | 7 | 32 | 10 | 2 | 2 | 1 | 1 | .... | .... | 92 |
| Diphtheria..... | 7 | 9 | 22 | 18 | 20 | 44 | 7 | 1 | 4 | 1 | .... | 1 | 2 | 136 |
| Diphtheria and Scarlet Fever | .. | .. | 3 | 1 | .. | 3 | 1 | .... | .... | .... | .... | .... | .... | 8 |

Comparing cases with deaths as given, we find that the percentage death rate was 14.7 for scarlatina, and that for diphtheria was 11.7. I have not the figures enabling us to determine the death-rate at different periods, but we may assume that the relative rates would be much the same as in other years and places.

We find for scarlet fever that in the nought to five period the deaths were 44, while those for the school period, five to nineteen, were exactly the same. Applying the rate in the London Report, this means that there were three times as many cases among children of school age as in those from nought to five years.

For diphtheria it would appear that the record for children of school age is more favorable. Assuming that the London rates prevailed of two to one for the two periods, we find the prevalence in the schools to have a ratio only 50 per cent. greater than that for the nought to five year period.

The following table illustrates the relative prevalence in the city of Ottawa:

| Ages | 0-1 | 1 | 2 | 3 | 4 | 5-9 | 10-14 | 15-19 | 20-24 | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Scarlet fever | | | 1 | 1 | | 2 | | 1 | | 5 |
| Diphtheria | 3 | 4 | 6 | 6 | 3 | 5 | 2 | | 1 | 30 |

From the figures here given for scarlet fever, we similarly conclude that the prevalence of cases among the school children was three times as great in the five to nine period as in the nought to five year period; but we find that in the matter of diphtheria there is by no means the same relation, there being twenty-two deaths in the nought to five period, and but five in the five to nine period.

These figures are of extreme interest since they represent the results of a year's work, where for nine months all cases of diphtheria were removed to the isolation hospital so soon as diagnosed, and the school children of the rooms, where cases had been, were inspected till the period of incubation was over. The very considerable number of cases which occurred during the year (320 of scarlatina and 351 of diphtheria) removes the element of incorrect deductions which may result from a small number of cases.

The history of these Ottawa figures as a statistical study is most interesting. For years the city had an unenviable reputation in the matter of contagious diseases. In 1902, there were in all 689 cases of scarlet fever and 234 of diphtheria. In February, 1903, a new well-equipped isolation hospital was opened, and after March all cases of the diseases occurring in the city were sent to the hospital. Of the 320 of scarlet fever, 198 were treated in the new hospital during the eleven months; the balance, 102, were treated else-

where, or after the complete removal to hospital of all cases began, there were for the nine latter months of the year but 159 cases compared with 161 in the first three months.

Of the diphtheria cases (251 cases), 69 occurred in the first three months of the year, and 182 in the latter nine months, during which all cases were treated in the hospital. While not directly bearing on this subject, it is pleasing to remark that the total deaths for the nine months from scarlet fever were but three, while those from diphtheria were nine, or 1.52 per cent., and 4.9 per cent. of the cases. Such a low record of deaths for so large a number of cases has, so far as I know, never hitherto been obtained. But the other important point is the effect of the removal to hospitals of first cases in lessening the prevalence of the disease. In 1902 there were 689 cases of scarlet fever in Ottawa with thirty-nine deaths, and 487 cases of diphtheria. As a matter of fact, there has resulted from the more effective methods adopted in 1903, a reduction of over 50 per cent. in the cases of scarlatina and 85 per cent. of deaths, and 41 per cent. in the cases of diphtheria, and 54 per cent. of deaths.

But little more, I think, need be said on the subject, as the methods for dealing with infectious diseases in schools will be dealt with in another paper. To me, and I think to every one, it must be apparent that practically there is no limit to the economic and life-saving results which public health work, moving along the lines of experimental science, is capable of. What it is apparent is necessary is:

1. A conviction arrived at by such statistics as have been cited that disease is disseminated in such ways as I have indicated.

2. That we be convinced by the results of such methods as have been especially illustrated by the Ottawa statistics, that an enormous saving of cases of disease and deaths is possible.

3. That we possess scientific methods so certain when persistently and systematically carried out, that they will suppress outbreaks of epidemic disease almost with the same certainty as the demonstrated amount of work which a properly constructed machine will perform with the combustion of a definite weighed quantity of fuel. All that is further required is to educate the public that such work is life-saving and patriotic, and that, like all other philanthropic work, the results are not only good to the receiver, but also to the giver. As Sir Launfal, in his search for the Holy Grail, came to realize:

"The Holy Supper is kept, indeed,
In whatso we share with another's need;
Not what we give, but what we share;
For the gift without the giver is bare;
Who gives himself with his alms feeds three:
Himself, his hungering neighbor and me."

—"Canadian Journal of Medicine and Surgery," March, 1904.

---

## THE WEAR AND TEAR OF LIFE—NEURASTHENIA.

By GUTHRIE RANKIN, M.D., M.R.C.P., of London,
Physician to the Dreadnought Hospital, Greenwich; Senior Assistant Physician to the Royal Hospital for Children and Women, Waterloo Road.

The term "neurasthenia" was first given in 1879 by Beard, of New York, to a group of symptoms which, though sometimes ill-defined and always capable of infinite variation, yet retain a general relationship which serves for the groundwork of a disease entity, little understood and never described before Beard's time, but through his investigations and those of many successors nowadays universally recognized as a formidable enemy of mankind. Speaking generally, neurasthenia may be regarded as a derangement of function resulting from exhaustion of nervous energy. The causes upon which it depends are varied and often obscure, but, despite the testimony of contrary opinion, it can scarcely be denied that the increasing wear and tear of life at the present day probably plays the most important part in its etiology. It is not suggested that the greater pace at which the world moves is the sole explanation. The disease has probably existed from the remote ages, but it seems unlikely that it can have been prevalent in the earlier period of the world's history, else it could not have escaped description at the hands of the many eminent clinical observers of ancient days. And even coming down to recent times, it will be admitted by most physicians that in their individual experience the number of cases which they are compelled to classify as neurasthenics is infinitely greater than a few years ago; that it is one of the disorders which in its prevalence has become fashionable enough to be designated "the disease of the century"; and, most noteworthy of all, that its victims are to

be found in far greater abundance among the restless inhabitants of busy communities and large centers of industry than in country districts where life is passed under conditions of uneventful monotony, and of prosaic, unexciting occupation and duty.

Cases occur in rural as well as in urban districts, but the former bear but a small proportion to the latter, and are usually found to have been determined by a definite cause, such as an accident, adversity, or mental shock. The dweller in town, on the other hand, frequently develops all the classical features of the disorder without any unusual occurrence in his life or circumstances to account for it. He has been living his ordinary, every-day existence; but this is one of continuous high pressure, and ultimately his staying power becomes overtaxed, and terminates, without the development of organic disease, in a functional wreckage which is the expression of Nature's revenge for the lack of due attention to her imperative demand that rest as well as work is necessary for the maintenance of the *mens sana in corpore sano.* But the fault does not always or wholly lie at the door of a badly regulated life. The original capital of nervous force with which humanity is endowed is not the same for every individual. One man is descended from ancestors who have been proverbially healthy, and have most of them attained long lives; another is the inheritor of a nerve instability which has manifested itself either in his immediate or remote progenitors in various forms of mental trouble or nerve disorder. Obviously, the latter individual has a serious handicap to begin with, and is more likely than the former to break down under the stress of work and worry.

To all who are exposed to excessive and prolonged attacks upon the citadel of their vitality, capitulation of their resistive power may follow at any moment, and unless such early warnings of waning energies as sleeplessness, incapacity for mental concentration, physical languor and disturbed digestion are given heed to and counteracted by proper means, the sufferer will inevitably find himself ere long in the midst of neurasthenic tribulations, from which it will be tedious and difficult for him to emerge. A short period of rest and leisure may, if adopted in time, restore a life which would otherwise become miserable to its possessor and wholly unequal to its daily task of usefulness and healthy activity.

The disease is widely distributed, and, though specially prevalent in America, is met with in all the civilized countries of both hemispheres. "It is," says Proust, "equally spread among all civilized peoples in whom the struggle for existence keeps up an

incessant and exaggerated exaltation of the functions of the nervous system. To-day every one endeavors to raise himself higher than his ancestors; competition has increased; conflicts of interests and persons have multiplied in all conditions of life; free course is given to ambitions that are often little justified; a crowd of individuals impose on their brains a work beyond their strength; then come cares and reverses of fortune, and the nervous system, under the wear and tear of incessant excitation, at last becomes exhausted."

We are still in ignorance of the pathological conditions underlying the disease. It is seldom a direct cause of death, and therefore very few opportunities have arisen for *post-mortem* investigation. In a small number of traumatic cases where death has ensued, punctiform hæmorrhages have been found scattered throughout the brain and cord, but these cannot be looked upon as necessarily explanatory of the symptoms. Various theories have been advanced to satisfy the clamorings of our ignorance, but none of them is wholly satisfactory.

Bouchard attributes the disorder to abnormal fermentations in a stomach which, in virtue of heredity or congenital weakness of its muscular coat, contracts insufficiently in the intervals between different periods of digestion. Under these circumstances he believes that soluble toxins are produced which, when reabsorbed, impair the anatomical elements of the different organs, and notably those of the nervous centers.

Another theory suggests that the disease is due directly to vitiation of nutrition, the result of imperfect digestion. The dyspepsia need not, according to the advocates of this hypothesis, be necessarily associated with gastric dilation, but it produces, sooner or later, anæmia, which in turn gives rise to depression of the nutritive activity of all the tissues of the body, and more particularly of the nerve elements.

Glenard has endeavored to explain both the dyspepsia and the neurasthenic symptoms by a sinking of the viscera in the abdominal cavity; but, though enteroptosis exists in a certain number of cases, it is the exception rather than the rule.

The prominence of vasomotor phenomena in the symptomatology of the disease has led to a suggestion that low blood pressure, causing an overloading of the portal circulation and an imperfect filling of the heart, may be the responsible pathological factor in the etiology.

The frequent association of neurasthenia with Graves' disease,

osteo-arthritis, and the menopause in women—in all of which vasomotor disturbance plays a prominent part—lends some apparent likelihood to such a theory; but, in the light of recent research, it may well be asked whether all of them are not due to one or more toxic influences which have yet to be discovered.

Whatever the ultimate nature of the pathogenic origin of neurasthenia may prove to be, the functional disturbances which the disease produces appear to depend upon some primordial alteration of the nerve cells which we do not yet understand.

In its incidence, neurasthenia is most frequently met with between 20 and 40, though it may set in at almost any age. It attacks men more frequently than women, and is especially apt to affect those of neurotic inheritance, or those who live under conditions of mental or physical tension. All forms of excess predispose to its occurrence; it is therefore not infrequently the Nemesis of a life spent in luxurious idleness and self-indulgence. It is probable that the present-day system of education, with all the anxiety produced by endless examination tests, may often be answerable for the earliest beginnings of nerve instability. To the mental training there has also to be added the schoolmaster's craze for athletic development, often carried far beyond the physical strength of the growing boy or girl, and again leading to a depletion of the reserves of energy, which bodes ill for the future capital account of those who, in youth, are compelled to give such hostages to the fortune of their vitality.

In the great majority of cases neurasthenia is a disease of gradual development, but occasionally it sets in acutely and can gradually be referred either to some form of serious mental shock or to an accident which subjects the nervous system to severe physical jarring. Its symptoms are so varied that it is well-nigh impossible to give a comprehensive description of it, but the leading feature of every case is a constant sense of weariedness which prevents the comfortable accomplishment of any act demanding sustained effort. The sense of weakness may declare itself mostly through cerebral or mostly through spinal centers, but there is, as a rule, such an amalgamation of manifestations that it is both superfluous and confusing to follow the descriptive plan of those writers who attempt to differentiate between the one and the other. It is true that in one instance the symptomatological grouping will be mostly cerebral and in another mostly spinal, but no case is ever entirely referable to either the brain or to the spinal cord. Besides, cases are abundant in which the foreground of the pic-

ture is prominently devoted to local manifestations, which may belong to the cardio-vascular, gastro-intestinal, or sexual system almost exclusively.

It mostly happens that the patient, who has been indefinitely out of health for some time, is at last driven to the doctor because of this sense of languor, to which has lately been superadded sleeplessness and impaired digestion. He ascribes all his discomfort to some passing disturbance of that much-abused organ—his liver—and feels confident that once it is put right he will speedily be quite well again. But his friends tell you that within recent times his temperament has entirely changed; that, whereas he used to be cheerful, happy, obliging and sociable, he has become moody, captious, introspective and selfish. He may be emotional, especially when the subject of his present state of health is referred to, and he never wearies of relating the manifold and complex ailments from which he believes himself to be suffering to the few persons he admits to his intimate friendship. From the point of view of physiognomy, two distinctive types of the disease are met with—one, the patients belonging to which are depressed and sullen, and another in which they are excitable and voluble in speech. The former type is thus graphically described by Bouveret: "The patient is pale and thin, without strength or courage, and always sad and dejected. He sees everything from the worst side; he rarely smiles; he goes along with his head down, avoiding the looks of others, his eyes languid and dull; he hardly dares look people in the face when he speaks to them, and the vagueness of his looks is, as it were, a sign of powerlessness, an avowal of the inferiority of his moral strength; he always has the gait of a tired man; he is usually very sensitive to cold, and is clothed in summer almost as in winter; his speech is slow, broken and trailing. This neurasthenic is not talkative."

The latter type is represented by the patient whom Charcot has distinguished by the descriptive title of "the man with slips of paper." He is plump, fresh-complexioned, and capable of a certain amount of activity. His speech is ready, and he enters with avidity into an interminable recital of discomforts and unpleasant sensations which are not harmonious with his general appearance. He is possessed with fears that the full gravity of his condition will not be appreciated, and is so afraid of forgetting the innumerable details of his ailment that, at the outset of his consultation he produces a formidable manuscript statement of his woes and miseries, about every one of which he has endless questions to

ask. This neurasthenic is well known in every consulting-room, and is the terror of the busy physician.

Between these extreme types there is a great variety of intermediate forms, but in every case of neurasthenia the following individual symptoms will be found grouped in every conceivable combination: The tongue is usually frothy, dry and tremulous; it is often also abnormally red. There is no active appetite, but the patient is tempted to eat because of the uncomfortable sense of sinking at his epigastrium, which is temporarily relieved by the taking of food. His bowels are uncertain, being too loose one day and not acting at all the next. He is constantly troubled with flatulent distention of his abdomen, accompanied by frequent eructations which are often disagreeably sour and acrid. The motor power of his stomach may become so seriously impaired that dilatation ensues. He is liable to an uncomfortable form of spasm affecting his colon; and Clifford Allbutt has pointed out that, under such circumstances, it is not uncommon to find in the neighborhood of one of the flexures a soft, sausage-shaped tumor which slips away from under the hand on gentle pressure, and which varies in position from day to day, but is always in the axis of the large intestine. As a rule, the kidneys are over-active; the urine is of low specific gravity and often loaded with phosphates. It is worthy of passing note that in an appreciable number of cases, one or both kidneys are abnormally loose. There is no interference with the functions of the bladder, but micturition may be accompanied by urethral smarting and is occasionally followed by the discharge of a small quantity of prostatic mucus which always cause the patient grave concern and suggests to his alarmist mind sexual horrors of every description.

Headaches are invariably associated with neurasthenia, and the patient is seldom free from them on first waking in the morning. The head sometimes feels as though it were encased in an unyielding iron frame—the "casque neurasthenique" of the French. The pain is usually vertical or occipital in distribution, but it may involve the whole cranium. It is subject to acute exacerbations under the influence of the slightest fatigue or excitement, and it always leaves behind such hyperæsthesia of the scalp that for days it may be almost impossible to brush out the hair. A mild form of vertigo sometimes accompanies the headache, but it is not associated with aural symptoms. The muscles, especially those of expression, are tremulous when put into use, and one or other set of them may become the seat of unpleasant

and uncontrollable clonic spasms. When the tremor affects the whole muscular system, it closely resembles that met with in cases of exophthalmic goitre. Every muscular effort is quickly followed by a distressing sense of weakness, which varies in intensity from day to day, but never goes the length of a true paralysis.

The instability of the vasomotor system is manifested by flushing, sweatings, cold hands and feet, throbbing vessels and palpitation. The knee-jerks are exaggerated, and possess this striking characteristic that when the patellar tendon is tapped in the ordinary way the resulting reflex movement is not confined to the leg, but often extends to the trunk of the body, so that the patient is jerked off his seat by the violence of the reflex act. In a patient under present observation the consequence of tapping the patellar tendon goes even further than this, and invariably brings about an epileptiform attack of a hysteroid character. In marked contrast to this hyper-excitability of the patellar tendon the plantar reflex is either feeble or entirely absent, and the toe phenomenon is always flexor. This reflex antagonism was first called attention to by Buzzard, and is, in a doubtful case, valuable evidence in favor of a functional as opposed to an organic lesion. There may be a spurious ankle-clonus, but it is not maintained beyond two or three movements. The gait is not that of health, nor of any well-known disease of the nervous system; it is neither ataxic nor spastic, but walking is carried on with manifest difficulty, every step being executed at the expense of an enormous effort to clear the feet from the ground, to which they seem to be glued.

Sleep is always disturbed, and is often prevented by spasmodic jerking of the limbs, rushing sounds in the ears, extreme abdominal distention, or a sense of fulness and pulsation in the head. When at last, in the early hours of the morning, the patient drops off, the rest he gets is broken by dreams, often of a terrifying nature, and after a few hours he wakes unrefreshed, and with a sense of inertia, as though he had never closed his eyes.

The special senses are upset in various ways. The visual field may be contracted, there is frequently indistinctness of vision from asthenopia, and mucæ volitantes are a source of constant worry. Buzzing noises in the ears are complained of, and are sometimes accompanied by impairment of hearing. A bitter taste in the mouth may entirely prevent the enjoyment of food, and subjective sensations of smell may haunt the nostrils continually.

Common sensation is impaired either in the direction of hyper-

æsthesia, paræsthesia or anæsthesia. Muscular or neuralgic pains are seldom altogether absent. They are situated, for the most part, in the back, whence they radiate to the legs and arms. Not uncommonly one particular vertebral spine is tender to touch, and is referred to as the center from which all the shooting pains emanate. In women the coccyx is sometimes the seat of acute suffering, and the fifth or sixth intercostal nerve on the left side is, in some unaccountable way, often selected for neuralgic manifestations. The heart is irritable; its action may or may not be persistently rapid, but it is always subject to immediate acceleration on the least physical exertion or mental emotion. The patient is uncomfortably aware of its beatings, but, unless in the presence of anæmia, no murmurs are to be heard at its orifices. Pains in the precordial region and attacks of pseudo-angina are common, and are liable to produce a state of extreme dejection and depression. The pulse is full, compressible and sometimes irregular. Arterial throbbing may be visible to almost as great an extent as in aortic regurgitation; the pulsations of the transverse aortic arch in the suprasternal notch or of the abdominal aorta in the epigastrium may even be so pronounced as to raise a suspicion of aneurysm. Morbid fears possess most neurasthenics. These may assume various phases, but the most constant are a dread of being in an enclosed space—claustrophobia, or its opposite, a dread of crossing an open space—agoraphobia. The former is the more common of the two, and often takes the form of an unreasoning fear of being taken ill in a crowded church or theater from which escape will be impossible.

The general intellectual condition is variable, but its most prominent characteristics are loss of memory and difficulty of mental concentration. A more or less marked degree of amnesia is often the first indication of failing mentation. The patient forgets the names of individuals, and has a difficulty in finding the proper words to describe familiar objects. In writing, he misspells his words and expresses himself badly. The effort of conversation or writing soon becomes, like every other effort he makes, followed by profound exhaustion. With these defects there come to be associated vacillation of purpose, feebleness of volition, and failure of initiative. All interest is lost in the affairs of every-day life, and the patient possesses neither energy nor will force to shake himself free from the concentration of his feeble powers of attention on his own forlorn state, or from the exercise of his faulty and capricious judgment on the means which he

deems necessary for the restoration of his health and energy. He often sees no way out of his miseries but in an appeal to suicide, but, except there be a hereditary tendency to insanity, he seldom puts his oft-proclaimed purpose into execution.

The duration of the disease depends largely upon the circumstances and surroundings of the patient. When the cause is overwork, a suitable holiday will probably speedily bring about recovery. But in many instances a relapse occurs soon after a return to the usual routine of every-day life, and in such, though old age may be attained, there is risk of more or less permanent invalidism. There is, moreover, always a danger that the failure of repeated attempts to effect a recovery may tempt the patient to find relief to his symptoms in an appeal to morphine or chloral for the cure of his insomnia, to cocaine or some other of the numerous analgesic drugs for the mitigation of his pain, or to alcohol for an escape from his overmastering depression and languor. If an illegitimate indulgence in any of these is permitted, either by the well-meant but injudicious advice of friends, or by the weak-kneed indifference of the doctor, or by the yielding of the patient himself to the temptation they constantly set before him, the possibility of his becoming a hopeless slave to narcotics or stimulants, or both, is a serious contingency which must ever be kept steadfastly before the prognostic eye.

There is one variety of the disorder which, at least in its earlier developments, comes rather within the domain of surgery than medicine, to which short reference must be made in order to make the picture complete. It bears all the stigmata of ordinary neurasthenia, but it possesses this important characteristic that it is initiated by an injury or shock, and can therefore be referred to a definite cause. A railway or other accident which causes grave concussion of the cerebro-spinal system is the most frequent form of antecedent injury, and though in many instances the evidences of nervous breakdown ensue immediately after, it is remarkable that more commonly an interval, varying from a day to several weeks, in which the patient is apparently perfectly well, intervenes between the occurrence of the accident and the first manifestation of nervous symptoms. The patient may at first be dazed and stupid, but without complete oblivion as to what has taken place, or he may be restless and hysterical.

He then either immediately glides into neurasthenia or rapidly regains his normal composure for the time being, but subsequently develops the usual signs of nervous prostration and instability.

These are in all respects similar to the symptoms of the idiopathic affection, but general paresis is often more marked, and localized monoplegias, mostly affecting the lower limbs, are not unusual. Hysterio-epilepsy is said to be a frequent sequel in traumatic cases, but though not unknown elsewhere, it is comparatively rare outside of France.

The sequential dangers to be feared after neurasthenia are mostly referable to the nervous system. Hysteria in women and hypochondriasis in men are the most frequent complications, and, when there is an inherited tendency to mental disease, the neurasthenic attack may prove to be the first step downward in the direction of insanity. A concussion or jar severe enough to produce neurasthenia, but unaccompanied by apparent tissue lesion, has frequently proved the starting point of various forms of cerebral and spinal sclerosis.

Exophthalmic goitre sometimes supervenes on neurasthenia, and interesting speculations as to the closeness of the relationship between these two disorders are, as has already been mentioned, suggested by the similarity of many of the symptoms common to both of them.

As regards prognosis, the majority of cases ultimately recover, and even when complete restoration of health is not achieved, life itself is rarely threatened. Inveterate cases may go on from bad to worse until the patient's career is ultimately terminated by an incurable melancholia or dementia, but even after the continuance of complete disability over a period of years, a striking event in the patient's life, such as a sudden and unexpected accession of fortune, may speedily dissipate the symptoms from which he has so long suffered, and he may recover the full usefulness of a vigorous and active existence. Unfortunately, even after recovery has taken place, relapses are so liable to follow that the possibility of permanent cure must always be stated in terms of guarded circumspection. The outlook is most favorable when the patient is in comfortable worldly circumstances, and is thus enabled to secure the rest, change of scene, and other appropriate addenda of treatment without attendant worry as to ways and means.

In well-marked cases there is seldom any difficulty in diagnosis, but it is important to bear in mind the possibility of the co-existence of organic disease. Neurasthenia merges almost imperceptibly into other morbid groups, and it is impossible to draw a definite boundary line between it and such closely allied conditions as hysteria or hypochondriasis. Examination of the urine and of

the fundus oculi should never be omitted so as to minimize the danger of overlooking structural diseases of the nervous system or of the kidneys, in many of which the early stages present symptoms of a distinctly neurasthenic type.

The resemblance to Graves' disease is so great that certain diagnosis may, for a time, be impossible, but a persistent pulse of 120 or more, accompanied by vaso-motor disturbances, is distinctly in favor of early exophthalmic goitre, whereas the existence of morbid fears, especially of claustrophobia or agoraphobia, is an equally strong argument in favor of neurasthenia. The neurasthenic is not emotional to the like degree as the hysteric, nor does he crave in the same way for sympathy. In traumatic cases it is always necessary to guard against the possibility of malingering or deliberate simulation, especially when questions of compensation are in the balance.

As regards treatment, rest is the first and obvious indication, and it must always be both mental and physical. Its power for good is intensified by the moral effect exercised on the patient by his physician and his surroundings. His enfeebled will-power is keenly susceptible to the influence of his environment, and in the seclusion of a nursing home the medical attendant has great opportunities for diverting his patient's mind from its usual gloomy and introspective imaginings by judicious management and by recourse to the various hygienic and therapeutic measures which are calculated to restore his energies and lost courage. In mild cases the requisite amount of variety and rest may be got from a sea voyage, a trip abroad, or a change of scene and surroundings at home; but no routine method is universally applicable, and it often happens that the breakdown has gone too far to leave sufficient energy for the enjoyment of either travel or recreation. Under such circumstances a course of Weir-Mitchell treatment will yield the best results. The essentials of this method are continuous rest, enforced feeding, and massage, and those require to be maintained over a period of six or eight weeks if a permanent benefit is to be achieved. Electricity is often of signal service as an addition to the other details of a rest cure. Its success is perhaps mostly due to its suggestive influence on the patient's mind, but it also undoubtedly promotes metabolism, stimulates muscular activity, and exerts a soothing and pleasant influence on the nervous system. When the rest cure is finished, the improvement gained will be made more lasting if the patient pays a short visit to the country, seaside, or a suitable spa before re-entering the field of his daily labor. Though drugs play a secondary part,

they ought not to be wholly neglected. When there is much restlessness, and particularly when sleep at night is broken, the bromides in suitable doses will be found of advantage. It is often a successful plan to order one or other of them in combination with arsenic or strychnine during the day, and, should insomnia still persist, to provide for it separately by 20 gr. of sulphonal, trional, or chloralamide, or 5 gr. of chloralose at bedtime. As soon as the sleep habit has been re-established the hypnotic should be dropped, and on disappearance of the restlessness the bromides also may be withdrawn. When the simple hypnotics fail to induce refreshing sleep the question of the eligibility of narcotics arises. Much has been written against the use of morphine, on account of the risk of creating an unconquerable habit, but if care is taken not to extend its employment beyond the immediate necessities of the case, it will be found that a few small doses, given hypodermically on successive nights, will have the desired effect without the least subsequent risk of habitual dependence on its influence. If anæmia is present iron in one of its milder preparations should be administered; and when vasomotor instability is a prominent symptom, there is no drug which exerts a better steadying influence on the circulation than ichthyol. It may be given in doses of from 5 gr. to 10 gr., and is often usefully combined with cannabis indica and one or other of the nerve tonics. A combination of 5 gr. of ichthyol, 5 gr. of reduced iron, 1-40 gr. of arsenious acid, and 1-3 gr. of extract of cannabis indica will be found to meet successfully the requirements of a large proportion of cases. As soon as the digestion is strong enough to deal with it, codliver oil should be added to the daily regimen. It is best given in one dose of half an ounce at bedtime, and it may be advantageously combined with a like quantity of maltine.

The bowels must be carefully regulated by a simple aperient, if such be required, and the activity of the liver will be promoted by an occasional dose of calomel or blue pill. When there is much discomfort from flatulence valerian fulfils a useful rôle; its nauseous taste may best be obviated by choosing the zinc salt and giving it in the form of a pill or capsule. If headaches are severe and persistent they will be relieved by the exhibition of one of the numerous analgesics so much in vogue nowadays. The most dependable is probably antifebrin, which should be ordered in doses of not less than 5 gr. Alcohol must always be used sparingly, if at all. A tumblerful of well-matured stout taken with luncheon is often enjoyed, but in many cases a light Burgundy or claret is preferred, and agrees better. In traumatic cases, if there is much

complaint of spinal tenderness, the use of a Paquelin cautery often affords marked relief to the pain.

Measures of prophylaxis ought not to be neglected. Children born of neuropathic parents should be safeguarded from the risks of their heredity by strengthening, as far as possible, the energy and resistance of their nervous centers. This can best be done by employing every hygienic means, during their developmental period, to ensure such a physical and moral education as shall substitute an acquired stable individual habit for an inborn untable tendency without risk of over-pressure. An adult who has once suffered from neurasthenia may do much to lessen the risk of recurrent attacks by careful regulation of his daily habits of life.

He must arrange his work so as to avoid undue fatigue. He should have long nights in bed, observe regularity in regard to his meals and exercise, and make a point of seeking periodically a short respite from the daily routine of duty by a change of scene and surroundings. He ought to decline all responsibilities involving prolonged worry or anxiety, and every slight ailment should be treated with more than ordinary care, so as to lessen the risk of strain on his nervous system.—From "The Medical Examiner and Practitioner," March, 1904.

---

PREPARING CLAMS FOR FOOD PURPOSES.—In the coast districts of many countries clams are used as an article of food to a large degree, especially by the poorer classes. It has now been shown that these common clams, as is also the case with the finest oysters, are occasionally infested with typhus bacilli, and are therefore very dangerous. If they are cooked at all, it is in most cases done so superficially that the bacteria are not killed thereby. The method, especially, of placing the nets containing clams for a short time in hot water is not sufficient. Doctor Klein, the bacteriologist, has demonstrated that this nutritious food can be entirely freed from deleterious additions by cooking it for a longer time. Clams should always be boiled in steam. If three layers of them are cooked by steam at the same time, ten minutes are sufficient for the lower layer and fifteen for the two others. Bacteriological investigation has demonstrated that after steaming clams for the length of time mentioned, no living bacteria, introduced into them before, were found. Steaming clams is far superior to boiling them in water.—Richard Guenther, Consul-General, Frankfort, Germany, January 26, 1904.

# POISONING OF ENGLISH BEER AND FOOD.

*(From United States Consul Smyth, Tunstall, England—Consular Reports for May.)*

We are just now having an echo in the courts of the epidemic of poisoning which broke out in Lancashire and Yorkshire four years ago, and which was subsequently traced to arsenical contamination of beer. Many deaths occurred at the time and so great was the sensation produced that the government was forced to step in and appoint a commission of experts with instructions and full powers to tap every source of information available with a view of locating the responsibility. This was done in the most thorough manner, as the report issued in the form of "blue books" unmistakably shows.

The head of this commission was Lord Kelvin, well known in the scientific world on both sides of the Atlantic, and associated with him were some of the cleverest analysts and toxicologists in the country.

In the present case judgment has been entered against the defendants, but the question of damages is still in abeyance.

### SULPHURIC ACID FROM PYRITES.

Messrs. Bostock & Co., plaintiffs, were manufacturers of glucose, or "invert" sugar, at Liverpool and had a large trade with brewers in Lancashire and Yorkshire for that product. Messrs. John Nicholson & Sons, of Hunslet, Leeds, defendants, had a contract to supply the plaintiffs with sulphuric acid to be used in the preparation of brewing sugar.

The analytical tests showed that this acid was impure, inasmuch as it contained arsenic in such quantities that the wort was poisoned and the ultimate brew rendered unfit and unsafe for human consumption. When this fact became known, Messrs. Bostock & Co. lost their trade and were eventually forced into liquidation. They sued for £300,000 ($1,460,000) damages for violation of contract, alleging that the defendants supplied them with an impure acid made from pyrites, when the conditions of their contract required them to provide a pure, commercial acid made from brimstone. The defendants denied any knowledge of the fact that the plaintiffs were using this acid in the preparation of glucose for brewing purposes, and stated that in this country pyrites had for nearly thirty years superseded the use of brimstone in the manufacture of sulphuric acid.

Pyrites, I may add, are imported chiefly from Spain and Portugal.

The progress of the case was watched with great interest, particularly by the brewers. The evidence of the public analyst for Liverpool was one of the sensational features of the trial. He declared that there was a sufficient quantity of arsenic in the acid supplied to Messrs Bostock & Co. to kill a million people a week. This showed that the discovery was made none too soon. Had the analysts failed to come to the aid of the physicians in determining their diagnoses, the consequences to beer consumers in the districts named would have been very little short of appalling.

### ADULTERATION OF ENGLISH FOOD PRODUCTS.

All the circumstances connected with this case are focused on the vital question of food and drink adulteration, as indicating the remarkable changes that have taken place in this country within the last quarter of a century. In confirmation of this, it is only necessary to refer to the efforts of the government to check the evil by legislation and by a system of espionage on the part of inspectors and experts that has been attended by very poor results so far. English ale—commonly called beer—was from time immemorial associated in people's minds with the highest standards of purity in fermented drink; but its purity has been questioned, and the effects of this questioning are not likely to fade away as long as the present generation remains.

When the real cause of the epidemic became known the beer drinkers in many districts were seized with panic and adopted whisky or gin as a substitute; brewing stocks fell, and both producer and consumer had to suffer from the general excitement and alarm.

### ARSENIATED GLUCOSE AND SULPHURIC ACID.

The quantity of arsenic, as arsenious oxide, discovered in samples of Bostock glucose taken from the breweries varied to a great extent, and in many cases was very large. The analysis of Professor Delepine, of Owens College, Manchester, showed 1.05 to 6.6 grains per pound; that by Mr. E. W. T. Jones, public analyst of Staffordshire (1 sample), 1.6 grains per pound; while Professor Campbell Brown, University College, Liverpool, examined a sample that contained a percentage equal to 9.17 grains per pound. Samples of "invert" sugar manufactured by the same firm and taken from the breweries showed quantities of arsenic in relatively large proportions, some of these as high as 4.34 grains per pound. The examination of the sulphuric acid used in the manufacture of

these sugars—that is to say, glucose or "invert"—showed an exceptionally high percentage of arsenious oxide, the quantity present in some samples running as high as 2.06 per cent. This acid was made from pyrites and was supplied by Messrs. Nicholson & Sons to Messrs. Bostock & Co. from February until November in one year.

ANALYTICAL TESTS OF BEER SAMPLES.

The analysis of some samples of beer brewed from these sugars brought out startling revelations. The quantity of arsenic ran as high as 1.5 grains per gallon, while in one case it reached 3 grains per gallon. Under such circumstances there is no room left to wonder at the spread of an epidemic among the masses of the two greatest industrial districts in England, when its causes and its pathology have been so clearly and firmly established. While no accurate estimate of the number of people affected could be ascertained, it is generally presumed that 10,000 would be nearly correct.

Before the pathology of the epidemic had been thoroughly understood hundreds of cases were treated as "chronic alcoholism," "cirrhosis of the liver," and various aggravated types of neuritis. It was about this time that a local practitioner brought the attention of the medical profession to a morbid condition found in many Manchester beer drinkers known as the "alcoholic heart."

CONTAMINATED TABLE SIRUPS.

Shortly after the discovery of arsenic in the brewing sugar of Messrs. Bostock & Co. the government inspectors found that the firm was about to place upon the market a new product in the form of a "table sirup," made from sugar "inverted" by Nicholson's sulphuric acid. This sirup was put up in two-pound tins, a large quantity of which had been sent to retail traders as trial samples. As good luck would have it, the sirup became solidified in the tins, through some accident in the process of manufacture, and all were returned. The analysis of Doctor McGowan, one of the experts to the commission, showed 1 grain of arsenic to each pound of this sirup. The whole stock, amounting to 14 tons, was thereupon destroyed.

ARSENICAL CONTAMINATION OF MALT.

In several instances it was found that beer manufactured by brewers using glucose, or "invert," other than Bostock's, contained arsenic. This led to closer examination on the part of the experts, which resulted in tracing the contamination to the malt kiln where gas coke was used as fuel. The economy of the latter as a substitute for oven coke, or "picked" anthracite, led to its use

by maltsters in the remote districts of Yorkshire and other counties. The arsenic in the fumes of the gas coke was brought into direct contact with the malt, deposited on the grain, and subsequently conveyed to the fermenting tub. The method of treating malt in these kilns was primitive and careless; in the brushing or cleansing process, which is an important feature of malt preparation, this is especially true. In defense of these methods, it was argued that malt treated in this manner derives a certain flavor, which is imparted to the beer and is very much appreciated by consumers. Admitting this, and ruling out the use of gas coke, a suggestion was made that the fumes of the fire might be advantageously passed through a screen of lime at the exit, so that the arsenic passed off in combustion might be taken up and the malt thus protected against contamination. A number of experiments in this direction are now in progress where the reconstruction of the kilns becomes a matter of impossibility from an economic point of view. All the leading brewers in this country now manufacture their own malt.

ADULTERATION OF FOOD PRODUCTS.

Incidentally, the attention of the commissioners was directed to the subject of arsenical contamination of certain food products and its effect upon the public health. The dangers from this source through preservatives, mineral coloring matters, etc., are pointed out and the people are admonished to be on their guard against them. Coal-tar products, caramel, phosphoric acid and phosphates, boric acid and borates, yeast foods, tartaric and citric acids, iron oxides, and glycerin are specially scheduled under this head. There is probably no country in the world so much exposed to the pernicious consequences of food adulteration as England is to-day. This is the result of sweeping changes in the agricultural, economic, and social conditions which have taken place concurrently with the steady increase in population and the enormous demand for food supplies from outside sources. Nearly every quarter of the globe contributes its quota, while the science and resources of chemistry are being constantly ransacked to supply us with some new and subtle product as a substitute for food, or the real thing itself, patented by the law and promulgated by the press through advertisements. We have reached that stage when it is well-nigh impossible, when we sit down to a meal, to tell where our food comes from or what it contains; we take some of it, as we do medicine, and wait for results. London gets the best of everything; the poor provincial has to take what is left—the adulterated residue;

the jams, marmalades, sirups, confectionery, etc., contain glucose or cheap sugars, "inverted" or otherwise, which have their proportions of arsenic. The milk is either sterilized by air or neutralized by water, while the potted creams, which are now the fashion, are preserved like the sweets and fall into the same category. Even vinegar has not escaped, for here again the sulphuric acid figures in the "conversion" of the grain.

### SUGAR AND SAUSAGE.

Demerara sugar, that innocent product of the colonies, has been found in an arseniated state from the practice of using phosphoric acid or chloride of tin to give it a "bloom," and sausage-makers have fallen into the habit of coloring their links with iron oxides that are particularly obnoxious to living tissues.

### ENGLISH COFFEE.

Coffee is made up largely of chicory, which comes from Belgium, where the roots are dried in kilns heated by coke, and, like malt, exposed to the toxic products of combustion. I will venture to say that every American who has traveled in England will bear me out in the statement that a cup of pure coffee is absolutely unobtainable in ninety-nine out of every one hundred hotels in the country. Either as a food product or a stimulant, chicory is admitted to be inferior to coffee; yet the mixture is everywhere permitted and even sanctioned by law. An abominable compound of this nature is sold in the shops, while, in accordance with the requirements of an act of Parliament relating to the adulteration of food, the printed paper on the tin tells you what it is.

### AMERICAN FOOD PRODUCTS ABROAD.

As far as American food products are concerned, I am happy to be able to state that the cry that was raised against them a few years ago has entirely subsided and their position in the market is now stronger than ever. In the case of American glucose, which is largely imported into England, not a single objection was raised by Lord Kelvin's commission. It stood the tests of the analysts in every instance where its purity was brought into question, while samples of the German article were found to contain slight traces of arsenic. I attribute our position in the food market, both here and elsewhere, to the free hand given to our agricultural department and the system of inspections which the latter has adopted and is carrying out with great success.

WM. P. SMYTH, *Consul.*

TUNSTALL, ENGLAND, February 20, 1904.

# EDITOR'S TABLE.

## SANITARIAN, JUNE, 1904.

### BURIED ALIVE—THE CORONER'S OFFICE.

Exulting in the apparently good riddance, the Governor having signed the bill abolishing the coroner's office, THE SANITARIAN and the medical profession of the city generally, all too soon, a month ago wrote obituaries of the office. Being a city bill, however, it required submission to the Mayor and his approval before it could become a law. Wholly regardless of the obituaries the Mayor has since sat upon it—*a la* "crowner's quest." The still would-be coroners adduced testimony to their good office in contrast with the contradictory opinions expressed concerning the proposed new measure, insomuch that the Mayor disapproved the bill, and it is buried—the coroner's office still lives.

### MORTALITY AND MORBIDITY REPORTS AND REVIEWS.

SIR HENRY THOMPSON, Bart, the distinguished surgeon and sanitarian, died at his home in London, April 18, 1904.

Sir Henry Thompson was surgeon extraordinary to the King of the Belgians, consulting surgeon to the University College Hospital, London, and Emeritus Professor of Clinical Surgeons. But he was more distinguished as sanitarian than surgeon, particularly with regard to "Diet in Relation to Age and Activity"—the subject of a treatise by him first published in 1886. Revised and enlarged (Frederick Warne & Co., London and New York) 1902. The earlier edition seemed to encourage the propagandists of vegetarianism, in so much that they claimed him as a disciple. The

later edition, however, is explicit in this regard; exposes the fallacies of the vegetarians, so called, advocates mixed diet, points out the errors and excesses in diet as the fruitful sources of disease and short life.

Sir Henry was born in Framingham, Suffolk, August 6, 1820. He was graduated in medicine at the University College, London, where he won honors. He was created a baronet in 1899. He was also the author of numerous papers on scientific and surgical subjects which are generally accepted as authoritative, and wrote two novels, "Charley Kingston's Aunt" and "All But." He was known also as a painter of ability and a deep student of astronomy.

---

STATE OF NEW YORK.—Monthly Bulletin, Department of Health, for March, 1904, 7,738,000: Total number of deaths, 14,308; annual death rate, 21.7; deaths under 1 year, 2,116; deaths 1 to 5 years, 1,123; deaths at 70 years and over, 2,828; deaths from cerebrospinal meningitis, 105; typhoid fever, 163; malarial diseases, 10; smallpox, 1; scarlet fever, 52; measles, 168; erysipelas, 73; whooping-cough, 50; croup and diphtheria, 252; diarrheal diseases, 182; consumption, 1,432; pneumonia, 2,011; acute respiratory diseases other than pneumonia, 1,072; puerperal diseases, 144; diseases of the digestive system (not acute diarrhea), 757; diseases of the urinary system, 1,040; diseases of the circulatory system, 1,458; diseases of the nervous system, 1,449; cancer, 492; accidents and violence, 619; old age, 660; general diseases not epidemic (except consumption and cancer), 572; unclassified, 1,442.

The largest number of deaths ever recorded in one month in this State. In twenty years covered by our records there have been fourteen months only in which the reported number of deaths has exceeded 12,000, and four times only has the monthly mortality reached 13,000; these were in January, 1890 and 1892; April, 1891, and July, 1892. July is uniformly the month in which the greatest number of deaths occur, and ordinarily there are between 11,000 and 12,000 deaths in July every year. But it is noteworthy that the periods of phenomenal mortality, when the number of deaths rises far above the ordinary for the month, occur in the winter or spring months. These extraordinary increases are mainly due to deaths from acute pulmonary diseases, which cause a far larger element of variability in mortality than do the diarrheal

diseases of midsummer. In the years 1890 to 1893, in which the great monthly mortalities occurred in the winter and spring months, the deaths from acute respiratory diseases for the year rose from less than 14,000 of preceding years to between 18,000 and 20,000 deaths for the year, mortalities which have hardly ever since been reached. No other causes or groups of causes of death have shown anything like this variation.

New York City, 3,838,024.—Total number of deaths, March, 7,684—annual death rate 23.6: Borough of Manhattan, 1,940,121; deaths, 4,413—death rate, 26.0. Borough of the Bronx, 294,939; deaths, 530—21.2. Borough of Brooklyn, 1,334,952; deaths, 2,345—20.6. Borough of Queens, 193,494; deaths, 257—16.6. Borough of Richmond, 74,518; deaths, 139—22.2.

INFECTIOUS DISEASES AND DEATHS FOR

| | Week ended April 30. | | Week ended May 7. | |
|---|---|---|---|---|
| | Cases. | Deaths. | Cases. | Deaths. |
| Measles | 1,398 | 46 | 1,836 | 39 |
| Diphtheria and croup | 409 | 62 | 382 | 40 |
| Scarlet fever | 419 | 26 | 391 | 23 |
| Smallpox | 6 | ... | 1 | ... |
| Chickenpox | 44 | ... | 78 | ... |
| Tuberculosis | 490 | 199 | 411 | 197 |
| Typhoid fever | 40 | 6 | 18 | 8 |
| Cerebrospinal meningitis. | 30 | 70 | ... | 77 |
| Totals | 2,756 | 409 | 3,117 | 384 |

COLORADO.—Denver, 175,000. Report for February: Deaths, 305—42 under 5 years; premature and still births, 10; death rate, per annum, 20.89. Deaths from phthisis, 68—"61 contracted elsewhere"; typhoid fever, 3 cases, 3 deaths; smallpox, 20 cases; chickenpox, 1 case; diphtheria, 32 cases, 2 deaths; scarlet fever, 50 cases, 3 deaths; measles, 180 cases, 4 deaths; erysipelas, 18 cases, 2 deaths; deaths from heart diseases, 10; pneumonia, 66; broncho-pneumonia, 5; nephritis, 11; cancer, 9.

CONNECTICUT.—Bulletin for March: Deaths, 1,517—130 more than in February and 96 more than in March of last year, and 115 more than the average number of deaths in March for the five years preceding.

| | 1904. | 1903. | 1902. | 1901. | 1900. | 1899. |
|---|---|---|---|---|---|---|
| January | 1,439 | 1,420 | 1,172 | 1,439 | 1,367 | 1,565 |
| February | 1,387 | 1,303 | 1,124 | 1,381 | 1,261 | 1,192 |
| March | 1,517 | 1,421 | 1,239 | 1,441 | 1,691 | 1,221 |
| Total 1st quarter | 4,343 | 4,144 | 3,535 | 4,261 | 4,319 | 3,978 |

The death-rate was 19.3 for the large towns, for the small towns 19.1, and for the whole State 19.2.

The deaths reported from infectious diseases, including diarrheal, were 353, being 23.2 per cent. of the total mortality.

Cases of infectious diseases reported: Measles, 844 in 57 towns; scarlet fever, 191 in 47 towns; diphtheria and croup, 93 in 26 towns; whooping-cough, 55 in 8 towns; typhoid fever, 31 in 17 towns; consumption, 29 in 11 towns.

*Annual Report*, 1903: The mortality was larger than in the previous year. Partly ascribed to increase of population, but chiefly to greater prevalence of infectious diseases.

For the twelve months ended August 31, 1902: Total deaths in the State, 14,248; for the corresponding period, 1903, 15,338. Tabular statistics and diagrams show the relative prevalence of the infectious diseases and ratios of mortality severally, for the two periods. From tuberculosis, however, there is a continued reduction, proportional with the increase of preventive measures; percentage of deaths to total mortality, 9.34. The admirably situated sanatorium for the treatment of tuberculosis, in New Haven County, now approaching completion, is described with illustrations.

The reports of the county health officers throughout the State are eminently creditable to the service.

The death rate of the total registered mortality of the year, exclusive of still births, was 15.2 per 1,000 of living population—940,785. The greatest mortality was in July; the smallest in June.

District of Columbia, 300,902—91,603 colored. Report for the week ended May 7: Deaths, 117, as against 104 during the previous week and 102 during the corresponding period of 1903. Of the deaths last week 70 were among the white inhabitants and 47 among the colored, which represent a death rate of 17.4 and 26.7, respectively; 20.2 as compared with 18.7 for the corresponding period of last year, and 17.9 for the previous week. The prevailing diseases responsible for the mortality of last week were

pulmonary consumption, 20; diseases of the kidneys, 10; diseases of the heart, 9; pneumonia, 11; cancer, 5, and apoplexy, 4. There were 3 suicides and 1 homicide. There was no change in the number of cases of diphtheria, there having been 4 new cases reported and 4 discharges, leaving as per last report 9 cases under treatment, quarantined in 7 different premises. Cases of scarlet fever increased by 1, making 27 cases in all under quarantine in 17 different premises. Eight new cases developed and 7 were discharged, including 2 by death. Typhoid fever shows a small increase of cases over those of last week—viz., 6 new cases, 2 discharged, leaving 49 cases in all under treatment.

ILLINOIS, Chicago.—Statement of mortality for the month of April, 1904, compared with the preceding month and with the corresponding month of 1903:

| | April, 1904. | March, 1904. | April, 1903. |
|---|---|---|---|
| Total deaths, all causes | 2,486 | 2,609 | 2,628 |
| Annual death rate per 1,000 | 15.68 | 15.93 | 17.06 |
| By sexes— | | | |
| Males | 1,431 | 1,564 | 1,527 |
| Females | 1,055 | 1,045 | 1,101 |
| By ages— | | | |
| Under 1 year | 387 | 430 | 435 |
| Between 1 and 5 years | 156 | 176 | 333 |
| Over 60 years | 563 | 573 | 505 |
| Important causes of death— | | | |
| Acute intestinal diseases | 100 | 96 | 99 |
| Apoplexy | 70 | 79 | 54 |
| Bright's disease | 193 | 157 | 147 |
| Bronchitis | 100 | 93 | 131 |
| Consumption | 296 | 332 | 283 |
| Cancer | 91 | 97 | 82 |
| Convulsions | 53 | 61 | 67 |
| Diphtheria | 27 | 31 | 47 |
| Heart diseases | 207 | 181 | 169 |
| Influenza | 13 | 18 | 20 |
| Measles | 4 | 2 | 70 |
| Nervous diseases | 102 | 112 | 141 |
| Pneumonia | 517 | 621 | 604 |
| Scarlet fever | 24 | 18 | 32 |
| Smallpox | 1 | 0 | 9 |

| | | | |
|---|---|---|---|
| Suicide | 32 | 38 | 38 |
| Typhoid fever | 35 | 34 | 33 |
| Violence (other than suicide) | 122 | 114 | 101 |
| Whooping-cough | 3 | 3 | 40 |

With but three exceptions the April, 1904, death rate is among the lowest on record. In 1897 the rate was 13.84 per 1,000 of the population; in 1901 it was 14.64 and in 1902 it was 15.83. For the previous ten years the average annual rate had been 17.31.

The 2,486 deaths reported during the month up to the close of office hours April 30 represent an annual rate of 15.68 per 1,000—or 9.4 per cent. lower than the average.

Mayor Harrison's Review, from his Annual Message, April, 1904, says: I have kept in closer touch with the Health Department than usual during the year, and as a result I wish to bring somewhat fully to the attention of the Council the present status of this branch of my administration, the results of its work and its effect upon the reputation of the city.

It must be a source of gratification to learn that, while Chicago spends the least amount, per capita, for health purposes, it has the lowest death rate of any of the principal cities of the country. These two assertions are based on official reports of the United States Census Office and the United States Department of Labor.

These figures show Chicago's death rate to be 20 per cent. lower than the average of the other ten cities, 23 per cent. lower than Baltimore's, 24 per cent. lower than Philadelphia's, 32 per cent. lower than Boston's, and 36 per cent. lower than New York's. They show its per capita expenditure for health purposes to be 58 per cent. lower than the average, and 66.6 per cent. lower than that of Boston and New York.

In achieving these results the following features of Health Department work are regarded as important factors:

1. Supervision and inspection of the milk supply, which has resulted in giving Chicago the best milk and cream of any large city in the country. The improvement in its quality and consequent effects on child life are shown in the statement that in 1896 more than one-third (37 per cent.) of the samples examined in the Municipal Laboratory were found to be below grade, and the deaths of children under 5 years of age were 66.6 per 10,000 of total population. In 1903 only 6.4 per cent. were found below grade, and the children's deaths were 44.7 per 10,000—an improvement of 83 per cent. in milk quality and a decrease of 33 per cent. in child mortality.

I would call the attention of the Council to the fact that the present force available for supervision of the milk supply—which includes the collection of samples throughout the entire city, inspection of dairies, stores where milk is sold, wagons, utensils, etc., consists of six milk inspectors, one dairy inspector and one milk tester. The total cost of this service for the year 1903, including salaries, horse feed, shoeing, repairing of harness and vehicles, purchases of appliances, bottles, chemicals, apparatus, etc., was $8,915. The license fees paid into the City Treasury amounted to $45,647. Add to this the sum of $7,217, collected in fines from violators of the Milk Ordinance, and the total receipts by the city through the work of the Milk Division amount to $52,864, or $43-949 more than its total cost. I beg to suggest to your Honorable Body that some part, if not every dollar, of this excess of receipts over expenditures would be profitably employed in the extension of the services of the Milk Division to the work of careful inspection and supervision of Chicago's milk supply at the points of production.

2. The efforts of the Department in the field of preventive medicine, especially with reference to consumption, diphtheria, influenza, pneumonia, scarlet fever, smallpox and typhoid fever. In 1893 the consumption death rate was 18.10 per 10,000 of population. A campaign of education in the cause and restriction of the disease was then begun, and has been carried on since. Last year the death rate was 14.04—a decrease of more than one-fifth (22.4 per cent).

In 1894 the city paid the penalty of previous years of neglected vaccination through an epidemic of smallpox, which cost 1,190 lives and an enormous loss in money. The practice of vaccination has been completely modernized and persistently pushed. An up-to-date Isolation Hospital has replaced the old "pesthouse," and at the close of last year there had been but sixty-one deaths from smallpox since 1895.

In October, 1895, the Department promoted the antitoxin treatment of diphtheria and assumed its treatment among the poor and destitute. In that year the deaths from this disease amounted to 11.66 per 10,000 of population. Last year they were only 3.44 per 10,000—a decrease of 70 per cent.

During the three years previous to the first appointment of the present Commissioner there were 4,494 deaths from typhoid fever—an average annual rate of 12.86 per 10,000 of population. During the last three years, 1901-1903, there were only 1,898 such

deaths—an average annual rate of 3.46 per 10,000 and a decrease of nearly three-fourths (73.1 per cent.) in the typhoid mortality. The decrease is due, in large measure, to the information given to the public as to the sanitary quality of the water supply, based upon the daily chemical examinations.

3. Chicago's system of free public baths, open throughout the year, is also a factor of public health. More than half a million men, women and children were, during the past year, afforded bathing facilities without charge. The Carter H. Harrison bath, opened in January, 1894, was the first absolutely free municipal bath established in the world.

Among other features of the ten years' work of the Department may be mentioned the development of a first-class practical working laboratory of chemistry, bacteriology, pathology and diagnosis, whose scope and volume of work may be inferred from the fact that considerably more than 100,000 separate determinations and manipulations are made annually in the regular branches, exclusive of special examinations and analyses;

—the original devising and subsequent perfecting of a system of disinfection, already widely copied elsewhere;

—the inauguration of medical school inspection in 1896—the second city in the country to make the attempt;

—the vast improvement in the registration of vital statistics and the certification of causes of death;

—the supervision of contagious diseases during life, and the conduct of their funerals and care of premises after death;

—and, above all, the persistent education of the public by circulars, leaflets, bulletins, lectures and addresses, whose lessons and precepts are disseminated and emphasized by various civic and philanthropic organizations, and still more widely by the public press.

The Commissioner claims that the Chicago public is thus made more intelligent on sanitary matters than is any other community, and largely to this fact he ascribes the constantly increasing healthfulness, the reducing death rates and the lengthening of human life in Chicago—facts shown by the Department's figures and corroborated by the official statistics of the United States authorities.

INDIANA.—The monthly bulletin of the Indiana State Board of Health says: There was an improvement in the health of the State in April as compared with March, but not in comparison with the

same month last year. For three consecutive months measles has been the most prevalent disease. Pneumonia, which was second in prevalence in March, was fourth in April. The order of prevalence was—measles, rheumatism, bronchitis, pneumonia, tonsillitis, influenza, typhoid fever and diarrhœa. Typhoid was more prevalent than usual, the deaths being more than in the same month in the three preceding years.

DEATHS.—The total deaths numbered 3,322, rate 15.2. In the preceding month the rate was 18.1 and in the corresponding month last year 12.7. The increase over April of last year lies almost entirely in the increase in typhoid, influenza and pneumonia. Deaths under 1 year, 532—16.9 per cent. of total; 1 to 5 years, 250. Deaths from tuberculosis, 385; typhoid, 56; diphtheria, 30; scarlet fever, 21; measles, 40; whooping-cough, 14; pneumonia, 557; influenza, 72; cancer, 89; violence, 134.

SMALLPOX.—There were reported 260 cases, in 29 counties, with 6 deaths. In the same month last year 590 cases, in 56 counties, and 21 deaths.

IOWA.—State Board of Health Bulletin for April reports outbreaks of infectious diseases in March: Typhoid fever in Vinton; chickenpox, Des Moines; measles in 5 localities; diphtheria in 5 localities; smallpox in 10 localities; scarlet fever in 24 localities. In February: Chickenpox, Spirit Lake; measles in 11 localities; diphtheria in 13 localities; scarlet fever in 31 localities; smallpox in 12 localities.

LOUISIANA.—New Orleans, 317,000—84,000 colored. Report for April, 1904: Total deaths, 387 white; 236 colored: 623 deaths under 1 year—white, 106; colored, 51; 1 to 5 years—white, 34; colored, 26. Death rates: white, 29.93; colored, 33.71; 23.58. Deaths from typhoid fever, 4 white, 2 colored; pneumonia, 23 white, 31 colored; tuberculosis of the lungs, 42 white, 41 colored; Bright's disease, 29 white, 8 colored; cancer, 13 white, 5 colored; senile debility, 16 white, 1 colored.

MICHIGAN.—The Secretary of the State Board of Health reports for April, 1904, compared with the preceding month, measles, smallpox, intermittent fever, inflammation of bowels, remittent fever, dysentery and cholera infantum were more prevalent; and influenza, pneumonia, pleuritis, cancer, erysipelas, diph-

theria, inflammation of brain, whooping-cough, meningitis, membranous croup and puerperal fever were less prevalent.

Compared with the average for April in the 10 years, 1894-1903, smallpox, typhoid fever and diphtheria were more than usually prevalent; and influenza, pneumonia, pleuritis, intermittent fever, erysipelas, remittent fever, cholera morbus, inflammation of brain, whooping-cough, meningitis, membranous croup and puerperal fever were less than usually prevalent. Meningitis was reported present at 9 places; whooping-cough at 20 places; diphtheria at 61 places; typhoid fever at 76 places; pneumonia at 115 places; scarlet fever at 128 places; smallpox at 151 places; measles at 171 places; and consumption at 260 places.

The total number of deaths returned to the State Department for the month of April was 3,212, or 194 less than the number registered for the preceding month. The death rate was 15.7, as compared with a rate of 16.0 for March. Deaths under 1 year, 518; 1 to 4 years, 172; 65 years and over, 1,008.

Deaths by causes: Tuberculosis of lungs, 235; other forms of tuberculosis, 37; typhoid fever, 81; diphtheria and croup, 47; scarlet fever, 25; measles, 27; whooping-cough, 15; pneumonia, 302; influenza, 104; cancer, 145; accidents and violence, 184.

There was a marked rise in the number of deaths from typhoid fever, and a decrease in the number reported from pneumonia and influenza, as compared with the preceding month.

MINNESOTA.—Minneapolis, 240,000. Report for March: Deaths, 231—44 under 5 years. Annual death rate, 10.68. Deaths from typhoid fever, 29; consumption, 23; cancer, 7; organic heart disease, 12; other diseases of the circulatory system, 3; bronchitis, 7; pneumonia and broncho-pneumonia, 27; Bright's disease, 10.

St. Paul, 185,000. Report for March: Deaths, 178—55 under 5 years; death rate, 11.54. Deaths from tuberculosis, 21; pneumonia, 25; typhoid fever, 2; diphtheria and croup, 12; nephritis, 6; scarlet fever, 1; cancer, 6..

MISSOURI.—St. Louis, 645,000. Report for March: Deaths, 1,174;—218 under 5 years; annual death rate, 17.01. Deaths from measles, 7; zymotic diseases, 105; scarlatina, 7; diphtheria and croup, 14; typhoid fever, 20; whooping-cough, 5; erysipelas, 12; consumption, 127; pneumonia, 219; bronchitis, 51; other diseases of the respiratory organs, 37; diseases of the circulatory system, 85; Bright's disease and nephritis, 56; cancer, 26.

NEW HAMPSHIRE.—The State Board of Health Bulletin for April reports the work of the Food Laboratory, H. E. Barnard, chemist:

Of 290 articles examined, 139 were adulterated, or varied from the legal standard. This is equivalent to an adulteration of 47.9 per cent. It must be remembered, however, that in collecting samples for analysis care was taken to collect articles of a suspicious character. Therefore the extent of adulteration of all food products is not shown by this figure, and is represented by a much smaller percentage. Apple juice, sweetened, colored, flavored, and preserved, finds ready sale in enormous quantities as raspberry, strawberry, and currant jellies and jams. A recent addition to this class of goods is a "pie filling," which is sold largely to the baker trade. It is similar to the imitation butters and jams in appearance and composition, and consists of a mixture of apple juice, starch, butter, eggs, glucose, and a small amount of pulp or grated rind of the fruit represented. This product is found on our markets labeled "Lemon Preserves," and is a typical illustration of misrepresentation.

Samples of "Orange Blossom Honey," guaranteed "strictly pure," and of "Pure Extracted Honey" have been found to consist entirely of glucose or corn sirup. One sample of "Pure California Honey," marked, "This sample contains a small amount of cane sugar, added to prevent crystallization," contained nearly forty per cent. of cane sugar. Honey compounds purporting to contain from twenty-five to fifty per cent. of honey proved to be corn sirup in which a piece of extracted honeycomb was immersed.

"Maple Syrup."—If every farmer in New Hampshire owned a grove of maple trees and made each spring all the maple sugar and syrup possible, the amount produced would hardly equal the quantity sold each year as pure maple sugar or syrup. It is undoubtedly true that even in New Hampshire, a large producer of maple products, four-fifths of the sugar and syrup sold in our markets is wholly or in part fraudulent. An inspection of three maple syrup bottling houses in the city of Manchester which were producing large quantities of "pure maple syrup," showed that their product was a dilute cane syrup colored with caramel, to which about twenty per cent. of melted maple sugar had been added. Another manufacturer had dispensed with maple sugar entirely, and was branding a mixture of cane syrup and corn syrup as "Pure Maple Syrup." A sample of "Cream Maple Sugar" sell-

ing for a high price as a superior article proved to be brown sugar and glucose.

"Jellies" and "Jams."—Of 128 samples of jellies and jams examined at the food laboratory of the State of Michigan during the past year but seven were free from adulteration; of 78 samples examined at the New Hampshire laboratory of hygiene 29 were pure and 49 adulterated.

The base of the imitation fruit jelly, jam, etc., is apple juice or apple pulp, obtained principally from the waste parings and cores of the apple drying or evaporated apple factory. These waste products are partially dried at the factory, packed in bales or barrels, and shipped to the manufacturer of fruit products at a very low cost. Upon arriving at the factory the stock is boiled for a time in open kettles and then placed in large, closed, copper kettles and heated by blowing with superheated steam until the clear apple juice drains out of the mass to the bottom of the kettle. It is then drawn off into tanks, and serves as stock for making all varieties of jellies and preserved fruits.

NEW JERSEY.—Hudson County (Jersey City and environs), 421,692. Report for year 1903: Deaths, 7,574—2,358 under 5 years; death rate, 18.0. Deaths from croup, 64; diphtheria, 167; measles, 0; scarlet fever, 52; whooping-cough, 39; typhoid fever, 59; smallpox, 2; all zymotic diseases, 785; phthisis, 899; bronchitis, 160; pneumonia, 924; cancer, for last seven months, only 107; violence, including accidents and suicides, 471; railroad injuries, 106; still births, 615.

If the inhabitants of Hudson County had died in 1903 at the rate of mortality which prevailed from 1875 to 1896 (both inclusive) the period during which old supply Passaic water was used in Jersey City and some other parts of the county, there would have been 10,205 deaths, instead of 7,574, a saving of 2,631 lives in 1903. The average annual death rate of Hudson County from 1875 to 1896, both inclusive, was 24.2 per 1,000 living. In the years from 1897 to 1903, inclusive, the average annual death rate was 18.8 in Hudson County, an annual reduction of 5.4 deaths per 1,000 persons.

Another interesting fact is the very notable reduction in death rate from typhoid fever in Jersey City since new water supply in 1896. In 1891, for example, the typhoid fever death rate was seven times as great as in 1903.

OHIO.—Sanitary Bulletin, March-April, 1904. For the most part, proceedings of the fourteenth annual meeting of the State and Local Boards of Health, at Columbus, January 21 and 22, of practical interest to health authorities generally.

Cases of and deaths from infectious diseases reported to State Board of Health during 4 weeks, ended April 19, 1904, 60 places, with an aggregate population of 1,194,018: Croup and diphtheria, 216 cases, 24 deaths; scarlet fever, 113 cases, 4 deaths; typhoid fever, 353 cases, 79 deaths; whooping-cough, 21 cases, 2 deaths; measles, 1,138 cases, 17 deaths. Smallpox, 349 cases, 19 deaths. January 1, 1904, to April 9, in 160 places, 1,945 cases, 63 deaths.

Cleveland, 430,000.—Report for March: Deaths, 678—97 under 5 years; annual death rate, 18.91. Deaths from typhoid fever, 50; diphtheria and croup, 16; tubercle of lungs, 55; pneumonia, 73; broncho-pneumonia, 19; bronchitis, 18; cancer, 20; heart diseases, 25; Bright's disease, 39; early infancy—congenital icterus, debility, etc.—48; senile debility, 29.

PENNSYLVANIA.—Philadelphia, 1,408,154. Report for week ended May 7: Deaths, 572—119 under 5 years; annual death rate, 21.15. Deaths from typhoid fever, 38; Bright's disease, 41; consumption, 86; diphtheria and croup, 9; measles, 3; scarlet fever, 3; diseases of the heart, 54; pneumonia, 66; broncho-pneumonia, 20; cancer, 17; smallpox, 5.

Report on contagious diseases, compared with that of the previous week:

| | Week ended April 30. | | Week ended May 7. | |
|---|---|---|---|---|
| | Cases. | Deaths. | Cases. | Deaths. |
| Smallpox ..... | 23 | 8 | 26 | 5 |
| Diphtheria ..... | 71 | 9 | 71 | 9 |
| Scarlet fever ..... | 89 | 6 | 102 | 3 |
| Typhoid fever ..... | 298 | 45 | 277 | 38 |
| Consumption ..... | ... | 73 | .. | 86 |

Pittsburg, 354,000. Report for the week ended April 30: Deaths, 157—54 under 5 years; annual death rate, 23.06. Deaths from diphtheria and croup, 5; whooping-cough, 2; measles, 2; scarlet fever, 2; typhoid fever, 7; tuberculosis, 19; pneumonia, 20; cancer, 3.

PHILIPPINE ISLANDS.—Report of the operations of the Board of Health for the month of December, 1903: The most important

causes of mortality in the city of Manila during the month, with the number of deaths therefrom, were as follows:

Convulsions of children, 331; pulmonary tuberculosis, 73; eclampsia, nonpuerperal, 65; acute bronchitis, 56; chronic bronchitis, 37; beri-beri, 34; meningitis, 26; diarrhœa and enteritis, 23; congenital debility, 23; senile debility, 21; dysentery, 15; malarial fevers, 15; cardiac disease, 13; Asiatic cholera, 11; typhoid fever, 10; acute nephritis, 6; pneumonia, 5; tetanus, 5; plague, 2; smallpox, 2.

Both cases of plague occurred in Filipinos, who were dead when found. The two deaths from smallpox occurred in Americans, a class in which this disease assumes an unusually severe type.

The deaths from cholera were reduced during the month to 11, there being a gratifying reduction from the 26 deaths from this cause in November, the 118 in October, and the 263 in September. It is confidently anticipated that with continuance of the present measures the infection of cholera will be practically eradicated from the city during the month of January.

Of the total deaths reported in the city during the month, 60.6 per cent. occurred in children who had not completed the first year of life. Of the total deaths occurring among the Filipino class of the population, 65.8 per cent. occurred among children less than 12 months of age.

RHODE ISLAND.—Newport, 23,000. Board of Health report for April: Total deaths, 28—2 under 5 years. Deaths from tubercle of the lungs, 2; general tuberculosis, 1; organic heart diseases, 3; pneumonia, 7; cancer, 2; senile debility, 4; annual death rate, 14.61.

WASHINGTON.—Seattle, 135,000. Department of Health report for March: Total deaths, 110—23 under 5 years. Annual death rate, 9.72. Deaths from pulmonary tuberculosis, 11; scarlet fever, 3; diphtheria, 3; typhoid fever, 3; cancer, 4; organic heart diseases, 13; pneumonia, 10; broncho-pneumonia, 5; Bright's disease, 2; senility, 4.

WISCONSIN.—Milwaukee, 315,000. Report for March: Deaths, 439—156 under 5 years; annual death rate, 15.89. Deaths from typhoid fever, 5; diphtheria, 7; phthisis, 41; pneumonia and broncho-pneumonia, 74; bronchitis, 18; cancer, 21; organic heart dis-

ease, 27; Bright's disease, 20; congenital debility, 35; senile debility, 20; violence, 23.

STUDYING YELLOW FEVER IN SOUTH AMERICA.—Two physicians of the Hamburg Institute for Tropical Diseases—Messrs. Otto and Neumann—have gone to South America for the purpose of studying yellow fever. They are supplied with considerable means furnished by shippers and merchants of Hamburg. In addition to scientific studies they are to collect information with reference to the new preventive measures now used in South America against yellow fever, and to devise means to prevent the heavy damages which the German merchant marine has suffered in the several years of yellow-fever epidemics. Further investigations of the subject are of great interest to Hamburg, as being in especially close connection with the countries infected with yellow fever.—Richard Guenther, Consul-General, Frankfort, Germany, February 9, 1904.

REMOVED THE GERMS.

Mr. B.—Did you take any money out of my pockets last week, dear? I've missed a roll of bills.

Mrs. B.—Yes, Charlie, I did. You know they say that old bills are so full of bacteria it isn't safe to carry them at all; and they were all awfully old ones.

Mr. B.—And did you sterilize them thoroughly?

Mrs. B.—I think I did.

Mr. B.—How?

Mrs. B.—Why, I exchanged them at the tailor's for a new spring suit.—"Detroit Free Press."

SANITARY BAKEHOUSES.—A number of bakehouses have been closed since the first of the year owing to the fact that they have not complied with the new sanitary regulations, which have been adopted by the London borough councils to bring about purer bread.

A campaign against unsanitary bakehouses has been pursued for several years, and a number of acts were passed to bring about reforms, but all failed to bring about better conditions. The new law hands over the supervision of underground bakehouses to the borough councils. If it fails to bring about a drastic reform in sanitation, the next step will be, some medical officers think, municipal bakehouses, where all bread is made by machinery.

There are 30,000 bakers in London, and their occupation is so unhealthy that they come third on the list of trades in suicides, seventh in alcoholism, and eleventh in liver disease.

Scientists took loaves from cellar bakehouses and cultivated micro-organisms from the bread.

FIREPROOFING WOOD.—Increased attention is being paid to the problem of rendering wood and other easily inflammable substances fireproof. From reports in the German press it would seem that the process of a Mr. Gautsch, of Munich, is very successful. The timber to be treated is placed in a vacuum, produced by pumping out the air. The cells are thereby freed of air and the wood is then impregnated under pressure with a solution of sulphate of ammonia and borax ammonia. The color, texture, or density of the wood is not affected thereby. The process renders it fireproof and proof against decay.—Richard Guenther, Consul-General, Frankfort, Germany, February 29, 1904.

## CO-OPERATIVE AGENCIES FOR THE EXTENSION OF THE REGISTRATION AREA AND IMPROVEMENT OF VITAL STATISTICS IN THE UNITED STATES.

AMERICAN MEDICAL ASSOCIATION.
DR. FRANK BILLINGS, Chicago, President.
DR. JOHN H. MUSSER, Philadelphia, President-Elect.

Section on Hygiene and Sanitary Science.
DR. GARDNER T. SWARTS, Providence, Chairman.
Atlantic City, N. J., June 7-10, 1904.

AMERICAN PUBLIC HEALTH ASSOCIATION.
DR. CHARLES J. FINLAY, Havana, Cuba, President.
Havana, Cuba, December —, 1904.

CONFERENCE OF STATE AND PROVINCIAL BOARDS OF HEALTH OF NORTH AMERICA.
DR. JOHN N. HURTY, Indianapolis, President.

UNITED STATES PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE.
DR. WALTER WYMAN, Surgeon-General, Washington, D. C.

UNITED STATES BUREAU OF THE CENSUS.
HON. S. N. D. NORTH, Director, Washington, D. C.
HON. W. A. KING, Chief Statistician for Vital Statistics, Washington, D. C.

ANNUAL CONFERENCE OF STATE AND TERRITORIAL HEALTH OFFICERS WITH THE UNITED STATES PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE.

*To the Officers and Members of State and County Medical Societies:*

This announcement is for the purpose of enlisting the co-operation of the organized medical profession of the United States in

the improvement of vital statistics in this country, and especially to secure their aid in promoting the adoption of adequate laws for the registration of deaths in the States that do not at present possess such legislation.

The great importance of such laws to the country as a whole, to the individual States and to private citizens, is indicated by the accompanying copy of a Joint Resolution passed by Congress and approved February 11, 1903.

Referring to this resolution of Congress, the American Medical Association, at its last annual session at New Orleans, on May 5-8, 1903, and upon the unanimous recommendation of the Section on Hygiene and Sanitary Science, adopted the following resolutions:

*Resolved,* That the American Medical Association heartily welcomes the action of Congress in promoting the adoption of complete and uniform systems of registration of vital statistics in the United States, and congratulates the American Public Health Association and the U. S. Census Office on their useful and effective co-operation for this purpose.

*Resolved,* That the American Medical Association strongly urges on the State medical societies that special committees be appointed to advocate and secure the passage of satisfactory registration laws in States that do not at present possess them, that county societies support and aid in the execution of such laws as far as possible, and that physicians individually, throughout the United States endeavor to promote the accuracy and value of the mortality statistics by giving clear and definite statements of causes of deaths on certificates of death:

*Resolved,* That the Committee on Public Health of the American Medical Association be instructed to co-operate with the corresponding committees of the American Public Health Association, the Conference of State and Provincial Boards of Health of North America, and with other committees organized for this purpose, and with the U. S. Census Bureau, the U. S. Public Health and Marine Hospital Service, and other branches of the Federal Government, in the work of promoting the adoption of suitable registration laws and the extension of the registration area, the proper compilation and presentation of vital statistics by States and cities in weekly and monthly bulletins and annual reports, the use of the standard certificate of death, and also in further work relating to the extension, improvement and practical use of the International Classification of causes of death, the dis-

position of jointly returned causes and preliminary work relating to its next decennial revision.

It is by the authority and under the express direction of the American Medical Association that this circular has been prepared by the Committee on Public Health and recommended to the attention of the officers and members of all State and county medical societies in the United States. It has been approved by the special committees of various National organizations co-operating in this work, and by the Federal authorities, and it is earnestly hoped that the entire medical profession of this country will give heed to this appeal and begin at once, in vigorous, systematic efforts in their own localities and through the perfected organization of the medical profession, to advocate the adoption of proper methods for the registration of vital statistics, and especially for the immediate record of all deaths as they occur, with their causes, by means of standard certificates of death and burial permits.

The absolutely necessary requirements of a satisfactory law for the registration of deaths have been formulated by the special committee of the American Public Health Association, composed of practical registration and sanitary officials, in co-operation with the U. S. Census Bureau, and have been fully indorsed by the American Medical Association and other co-operating agencies. They have been specially issued by the Census Bureau, in the form of a pamphlet entitled "Legislative Requirements for Registration of Vital Statistics," for the use of all who may desire to improve methods of registration. This relates chiefly to deaths, but a second pamphlet on "Registration of Births and Deaths" contains drafts of model laws for both purposes.

The essential requirements of a law for the complete and thorough registration of deaths may be summarized below, as taken from the authorities cited. It may be said, on the basis of all past experience in this country, that any proposed law or draft of a bill that does not comply with these fundamental requirements will prove inadequate and unsatisfactory in practice. Physicians should watch all such legislation and see that proper measures are adopted. It is better to have no law, or attempt at legislation, than one that is sure to produce only imperfect and worthless results, and that will merely bring registration methods and vital statistics into contempt.

These are the necessary provisions for a registration law for deaths:

1. Deaths must be registered immediately after their occurrence.

2. Certificates of death (standard form) should be required.

3. Burial or removal permits are essential to the enforcement of the law.

4. Efficient local registrars are necessary.

5. The responsibility for reporting deaths to the local registrar should be fixed.

6. The central registration office should have full control of the local machinery, and its rules should have the effect of law.

7. The transmission and preservation of returns should be provided for.

8. Penalties should be provided.

Include all of these provisions in a law and its results will be reliable; omit any one of them and the registration will be more or less defective and worthless.

It is not too early to begin work for the next legislative session. The first step, which should be taken without fail at the next annual session of the State Medical Society, is to appoint a strong committee—strong in interest in the improvement of registration and in ability to push the work, but preferably few in number—to organize the work in co-operation with the Public Health Committee of the Association and with the Census Bureau. This committee may correspond directly with Dr. Cressy L. Wilbur, Expert Special Agent of the U. S. Census Bureau, Lansing, Mich., who represents the Government authorities interested in the extension of registration, and is in direct touch with the Public Health Committee in its labors in pursuance of the resolution of the association. Dr. Wilbur will advise with the committees of any State in regard to the details of a proper registration bill, and will, when necessary, personally appear before medical societies, health officers' associations, legislative committees, etc., as may seem to be desirable for the purpose of advancing this work.

Please begin at once, and, if immediate results should not crown the first efforts, have your committee re-appointed at the next annual session, and fight it out until every State in the Union shall have an adequate registration of vital statistics. Our sanitary progress and the prevention of disease and deaths depend upon our knowledge of mortality and sickness, and it will be a glorious

achievement of the organized medical profession of this country if this grand result shall be brought about through its efforts.

Very respectfully,

*The Committee on Public Health of the American Medical Association.*

HEMAN SPALDING, M.D., *Chairman,*
Chief Medical Inspector, Chicago, Ill.

WM. C. GORGAS, M.D.,
Assistant Surgeon-General, U. S. Army.

W. H. SANDERS, M.D.,
State Health Officer, Montgomery, Ala.

J. N. HURTY, M.D.,
Sec. State Board of Health, Indianapolis, Ind.

VICTOR C. VAUGHAN, M.D.,
Memb. State Board of Health, Ann Arbor, Mich.

*Approved:*

*The Committee on Demography and Statistics in their Sanitary Relations of the American Public Health Association.*

WILLIAM A. KING, *Chairman,* Chief Statistician for Vital Statistics, U. S. Bureau of the Census, Washington, D. C.

CRESSY L. WILBUR, M.D., Chief of Division of Vital Statistics, Department of State, Lansing, Mich.

JOHN S. FULTON, M.D., Secretary State Board of Health, Baltimore, Md.

HENRY M. BRACKEN, M.D., Secretary State Board of Health, St. Paul, Minn.

JESUS E. MONJARAS, M.D., Mexico, D. F., Mexico.

FREDERICK L. HOFFMAN, Statistician Prudential Life Insurance Co., Newark, N. J.

*The Committee on Vital Statistics of the Conference of State and Provincial Boards of Health of North America.*

IRVING A. WATSON, M.D., *Chairman,* Secretary State Board of Health, Concord, N. H.

CHARLES A. LINDSLEY, M.D., Secretary State Board of Health, New Haven, Conn.

PETER H. BRYCE, M.D., Secretary Provincial Board of Health and Deputy Registrar-General, Toronto, Ont.

CRESSY L. WILBUR, M.D., Lansing, Mich., *Honorary Member.*

*The Committee on Morbidity and Mortality Statistics of the Conference of State and Territorial Health Officers with the United States Public Health and Marine Hospital Service.*

HENRY B. BAKER, M.D., *Chairman,* Secretary State Board of Health, Lansing, Mich.

GARDNER T. SWARTS, M.D., Secretary State Board of Health, Providence, R. I.

HENRY M. BRACKEN, M.D., Secretary State Board of Health, St. Paul, Minn.

*United States Public Health and Marine Hospital Service—Treasury Department.*

WALTER WYMAN, M.D., Surgeon-General, Washington, D. C.

S. N. D. NORTH, Director, Washington, D. C.

*United States Bureau of the Census—Department of Commerce and Labor.*

WILLIAM A. KING, Chief Statistician for Vital Statistics, Washington, D. C.

---

BIOGRAPHY OF A FOOL.

He didn't have time to chew
  The food that he had to eat,
But he washt it into his throat
  As if time were a thing to beat.
At breakfast and lunch and dinner
  'Twas a bite and a gulp and go—
Oh, the crowd is so terribly eager,
  And a man has to hurry so!
A bite and a gulp and away
  To the books and the ticker! A bite
And a drink and a smoke and a seat
  At a card table half of the night;
A pressure, a click and a pallor,
  A cloth-covered box and a song;
A weary old fellow at forty,
  Who is deaf to the noise of the throng.

—"Chicago Times-Herald."

# BOOK REVIEWS.

ELEMENTS OF WATER BACTERIOLOGY, WITH SPECIAL REFERENCE TO SANITARY WATER ANALYSIS.—By SAMUEL CATE PRESCOTT, Assistant Professor of Industrial Biology, and CHARLES-EDWARD AMORY WINSLOW, Instructor in Sanitary Bacteriology, in the Massachusetts Institute of Technology. 12mo, x+162 pages. Cloth, $1.25. Order through your bookseller, or copies will be forwarded postpaid by the publishers on the receipt of the retail price. New York: John Wiley & Sons. London: Chapman & Hall, Limited. 1904.

The purpose of this book is to fill a gap in the literature of the subjects of which it treats. For, while recognizing the fulness with which bacteriology, chemistry and water analysis is treated in many works, and the opportunities given to students by lectures in various institutions, the authors have recognized the need of an elementary work, both as an introduction to the subject and as a manual for students. Though it has been especially prepared with reference to the course of study pursued in the Massachusetts School of Technology, it appears to be equally well adapted to similar courses of study in other institutions. Nevertheless, the authors would have it "distinctly understood that students using it are supposed to have had beforehand a thorough course in general bacteriology, and to be equipped for advanced work in special lines."

It is admirably arranged in ten comprehensive chapters: The Bacteria in Natural Waters; Quantitative Bacteriological Examination of Water; Interpretation of the Quantitative Bacteriological Analysis; Determination of the Number of Organisms Developing at the Body Temperature; Isolation of Specific Pathogenes from Water; Methods for the Isolation of the Colon Bacillus; Significance of the Presence of B. Coli in Water; Presumptive Tests for B. Coli; Other Intestinal Bacteria; the Significance and Applicability of the Bacteriological Examination, and an appendix upon the composition and character of the culture medium.

THE THERAPEUTICS OF MINERAL SPRINGS AND CLIMATES.—By BURNAY YEO, M.D., F.R.C.P., Emeritus Professor of Medicine in King's College, London; Consulting Physician to King's College Hospital; Hon. Fellow of King's College; Formerly Professor

of the Principles and Practice of Medicine and of Clinical Therapeutics in King's College, and Examiner in Medicine at the Royal College of Physicians. Author of "A Manual of Medical Treatment"; "Food in Health and Disease," etc. 12mo, 760 pages. Cloth, net, $3.50. Chicago: W. T. Keener & Co.

While this work makes no pretense to a systematic treatise on the therapeutics of mineral waters and climatology, and is without reference to the mineral springs and climate of the United States, it nevertheless so summarizes and describes the distinctive properties of the waters and climatography of the mineral springs of Great Britain and Europe, some distant sanatoria and benefit of sea voyages as to make it an exceptionally valuable manual. It is divided into two parts. I. Mineral Springs: their natural composition, classification, uses and mode of application. II. Climate and climate resorts and their differentiation, and sea voyages; the selection and application, sanatoria treatment, and a list of sanatoria.

RÖNTGEN RAY, DIAGNOSIS AND THERAPY. With 324 illustrations in the text. By CARL BECK, M.D. Professor of Surgery in the New York Post-Graduate Medical School and Hospital; Visiting Surgeon to St. Mark's Hospital and the German Poliklinik. Octavo. Cloth, $4.00. D. Appleton & Co., 436 Fifth Avenue, New York.

A pre-eminently useful book for a clear comprehension and practical application of Röntgen science. As it is only by a thorough knowledge of topographic anatomy that the Röntgen rays can be effectually utilized the author has amplified this necessity and demonstrated it by numerous lucid illustrations. In the part devoted to Röntgen therapy, the author has kept facts and conjectures well apart, appreciating the limitations of this new field of progressive medicine, which is still in a state of development.

The illustrations are excellent; so rendered by both the engraver's art and superior quality of the paper.

MANUAL OF MATERIA MEDICA AND PHARMACY.—Specially designed for the use of Practitioners and Medical Pharmaceutical, Dental, and Veterinary Students. By E. STANTON MUIR, Ph.G., V.M.D. Instructor in Comparative Materia Medica and Pharmacy in the University of Pennsylvania. Third edition, revised and enlarged. Crown octavo, 192 pages, interleaved throughout. Bound in extra cloth, $2.00 net. F. A. Davis Company, publishers, 1914-16 Cherry street, Philadelphia, Pa.

A concise treatise, but comprehending such knowledge of the natural history, classification and properties of materia medica, pharmacology and therapeutics as every physician and every pharmacist undoubtedly requires for intelligent practice. It is very conveniently arranged for ready reference, and the details of the subjects of which it treats are so clearly defined as to render it particularly facile for the student and useful as a handbook for both physician and pharmacist.

DIAGNOSIS FROM THE EYE.—A new art of diagnosing with perfect certainty from the iris of the eye the normal and abnormal conditions of the organism in general and of the different organs in particular. A Scientific Essay for the Public and Medical Profession. Illustrated by HENRY EDWARD LANE, M.D. Kosmos Publishing Co., 765 N. Clark St., Chicago.

"This book," the author says, "deals with pure and unadulterated knowledge." Such knowledge of mankind as to know there are some dupes subject to imposters who would live upon them. This is the only kind of knowledge apparent in the composition of the book.

THE FOUNDATION OF ALL REFORM.—A Guide to Health, Wealth and Freedom. A Popular Treatise on the Diet Question. By OTTO CARQUÉ. Kosmos Publishing Co., Chicago, Ill.

This essay comprehends better knowledge—at least suggests a better purpose—than the immediately preceding one. It adduces the common facts to show the capabilities of man to live upon an exclusively vegetable or animal diet, raw or cooked, mixed or varied, according to circumstances and his cosmopolitan conditions and adaptations. And the author is apparently honest in his effort to persuade people that they would enjoy better health and live longer if they would altogether exclude animal food from their diet.

REPORT OF THE STATE COMMISSION OF MASSACHUSETTS ON FISHERIES AND GAME FOR 1903.—EDWARD A. BRACKETT, Winchester, Mass., Secretary. A Comprehensive Account of the Process, Expansion and Expense of Fish Culture in the State; How the Hunting of Game May Benefit the State; Breeding Game Birds and Animals, Etc., with an Appended list of Superintendents of United States Fisheries Stations and of the several States; a document of much interest to all persons who would be informed on the importance of the subjects reported upon.

PUBLICATIONS RECEIVED.

Bird's-Eye View of the World's Fair. Robert A. Reid, Publisher, St. Louis, Mo.

Report of Friends' Asylum for the Insane. Frankford, Philadelphia.

Further Observations on the Treatment of Tuberculosis at Fort Stanton, New Mexico. Paul M. Carrington, M.D., Surgeon U. S. Public Health and Marine Hospital Service.

Rational Treatment of Pulmonary Tuberculosis, with Cases. F. M. Pottinger, Ph.M., M.D., Los Angeles, Cal.

Internal Medicine—To What Extent Required or Elective in the Medical Course. S. G. Bonney, A.M., M.D., Denver, Col.

The Sanatorium Treatment of Tuberculosis. Herbert Maxon King, M.D., Liberty, N. Y.

Pulmonary Malingering. W. T. English, M.D., Pittsburg, Pa.

Improvement in Iron Medication. Archibald Church, M.D., Chicago, Ill.

Treatment of Pneumonia. Delancey Rochester, M.D., Buffalo, N. Y.

How to Write a Medical Article; A Plea for Plagiarism. G. Frank Lydston, M.D., Chicago, Ill.

Treatment of Chronic Nontuberculous Inflammation of the Lungs and Pleura. Ernest L. Shurly, M.D., Detroit, Mich.

Practical Clinical Notes on the Administration and Action of 2,000 Nucleoid, or Organic Iodine. G. Frank Lydston, M.D., Chicago, Ill.

Bulletin M: The Floods of the Spring of 1903 in the Mississippi Watershed. H. C. Frankenfield, U. S. Department of Agriculture, Water Bureau.

## CONTEMPORARY LITERATURE.

### FEMALE EDUCATION AND THE BIRTH RATE.

"'The way in which they go.' There is no especial fault in the content of their education, primary, secondary, collegiate or university. There is no need of making their curriculum feminine, lest womanly instincts be dulled. It is the way of taking the schooling, the physical demands of it, that have been responsible for most of the invalids that I have happened to know. Alumna's fate was sealed when she was in the grammar school.

"When the bee larvæ are about a week old, you remember, it is determined whether they shall be queens or workers. It is simply a question of nourishment; the queen has an abundance of the best food; the worker has a limited supply of inferior quality. The result is a stunting of the reproductive bee.

"May it not be possible that a similar effect comes in some degree to our women from our school system? The grammar schoolgirl is a larva, if you please, at the age when she should develop a new system of her being, vital both to herself and to her race. To perfect these organs she needs all her rich, red blood, and all her nervous force. If the drain claims her whole vitality how can there be any proper development? Just as very young children should give all their strength for some years solely to physical growth before the brain is allowed to make any considerable demands, so at this critical period in the life of the woman nothing should obstruct the right of way of this important system. A year, at the least, should be made especially easy for her, with neither mental nor nervous strain; and throughout the rest of her school days she should have her periodical days of rest, free from any study of overexertion. Most schoolgirls have many unhygienic habits, all of which tend toward checking her development. Exactly these points were suggested in an editorial note in this magazine some months ago, I remember. The physical conditions and irregularities general among high-school girls are appalling, in reference both to their own enjoyment and to the larger interests of the race.

"But this is not an argument against our system of education in itself; the matter is not one for school boards to regulate. The intelligent fathers and mothers of our little schoolgirls of to-day are the only ones who can remedy these conditions. They can make the girl take one easy year, even though it means 'losing a grade,' the bugaboo of schoolgirls, and they can keep for her her needed day of rest throughout her course. Even a year's delay in graduation is not so bad as a dwarfing of development. To hear a schoolgirl speak to the question of her waiting a year, one would judge that existence out of her own particular class would necessarily separate her from all the desirable pupils in school. But those arguments—have you ever noticed?—are never employed when a girl is given a double promotion and advanced a class."—From "Alumna's Children, by an Alumna," "Popular Science Monthly" for May. Other valuable papers in the number: "The College of the West," by Prof. David Starr Jordan; "A Prefer-

ence in English Spelling," Dr. Edward W. Brown; "The Study of Physics," by Prof. Frederick E. Beach; "English Herbals," by Agnes Robertson; "The Geology and Geo-botany of Asia," by Prince P. Kropotkin; "The Royal Russian Academy of Science and the Fine Arts," by Edward F. Williams, and the usual summary, "The Progress of Science."

### AFTER DEATH, LIFE.

We recoil from death. We resist its approaches. The instinct of life is strong and we struggle for continued existence. We look forward to coming years with hope, but are chilled when we see a point beyond which, seemingly, we cannot go. The cry of the soul is: "What shall I do that I may inherit eternal life?" Hence the preciousness of the Gospel. Life is its keynote. Life as over against death is its revelation. The hope of life is its inspiration. Not alone, but as involving all that life is revealed to be. It comes to us from the love of God; it is secured for us by the death of Christ; it will be to us the presence of God and fellowship with the redeemed forever. It is life on a higher plane, life in greater fullness, life forever. It does not spring from earth, it comes from God, and, therefore, lifts us up to God.

Jesus said, "I give unto them eternal life." This is repeated many times and in many forms. "He that believeth on the Son hath everlasting life." Jesus came that "whosoever believeth on Him should not perish, but have everlasting life." The nature of this life is explained in the conversation with Nicodemus: "Except a man be born from above he cannot see the kingdom of God." And it is further explained that this birth is of the Spirit. According to the universal law of descent this new life partakes of the nature of the Spirit, and is therefore eternal. It cannot die because "it is born of God." Death has no power over this eternal life, for Christ is our life, and because He lives we shall live also. Death is simply the opening door into the fullness of that which we already enjoy. We cannot give too great emphasis to this fact that eternal life begins in our generation. From the time we are born of the Spirit we live forever. "He that hath the Son hath everlasting life." Now, as well as in the world of spirits, we are children of God and partakers of His life. There is no break in the continuity of conscious existence; as the eyes close to the world about us, they open to the glories of the fullness of life with God.

In this transition only that which is of the earth will be lost. All

sin will be left behind, and all that responds to sin will cease forever. Temptation as we now feel it will be known no more. We will see Jesus as He is and will be like Him; we will see God and be pure in heart. The limitations of this union with the material will cease, and we will enter upon the spirit life unhindered by our present conditions. But all that is essential to our nature will remain; all that constitutes our personality will continue. We will "enter into life." Consciousness will remain; memory will continue to minister to life; the will power will be strong in perfect holiness; love will fill the heart and control all the faculties. We will be in a larger world of being, in touch with all that is holy and good, and all that ministers to happiness and well-being.

Life is a development. We grow in stature, we increase in knowledge, we enlarge in power. The child becomes a man. With the years we come into manhood and put away childish things. Old age may bring feebleness, because of the limitations under which we live, but in the freedom from these limitations, life, true to its nature, continues to advance in knowledge, in its powers, and in its blessedness. "Now I know in part, then shall I know even as I am known." We will be in the companionship of intelligent beings of our own and of higher orders. We will have knowledge of the wonderful works of God. We will have the experience of advancing years and enlarged thought. We cannot set any limit to this enlarging life. Ever and forever we will drink at the fountain; more and more, eternally we will receive the infinite stores of knowledge and wisdom.

This carries with it the activity that belongs to life. There will be no dormant powers then; there will be no unused energies; there will be no sealed chambers into which we may not enter. "His servants shall serve Him." Songs of praise will ever be on the lips, but they will be the songs of the faithful, who like the angels do His will. In what forms of activity life will manifest itself we cannot now know, for the things prepared for us are as yet beyond our highest thought, but it is against all we know of the spiritual life to suppose that our activity will be in such forms that we will simply be recipients of joy. The blessedness of life is not in being ministered unto, but in ministering. Increasing in knowledge, there will also be the communication of knowledge. Will not the saints in glory teach us who come after them the wonderful things of heaven and of love, of the universe and the works of God? Will not the minister continue to preach

the unsearchable riches of Christ? Will not parents unfold to their children the infinite love? Or children lead their late-coming parents into the beautiful paths of the Lord? Students we will be, with teachers who can make no mistake in their instructions. We cannot set bounds to the sphere of activity there, but we may well feel assured that the threads of life between the two worlds are not all broken, and that they who minister to the heirs of salvation bring tidings of great joy of the grace of God among those who are yet on earth.—"The United Presbyterian."

THE BIBLE.

I contend that we are not only on the point of impoverishing life and literature by the neglect of the English Bible, but that we have already impoverished life and literature. I am not dealing with a problem that lies in the future, I am speaking of a condition which is at hand. We are impoverishing life and literature by striking out of our life and our reading one great monument of our literature, the source from which much of what is best in later centuries is drawn, the inspiration upon which the best English style has been built.—NICHOLAS MURRAY BUTLER.

THE REVIEW OF REVIEWS for May is especially strong in its timely "news" features. It may be said that all the important topics of world interest at the present time receive treatment in the "Review" for May. It provides a group of entertaining and instructive articles on the Russo-Japanese war and cognate topics. In addition to the careful editorial treatment of the events of the month in "The Progress of the World," there is a sketch of the great sea-fighter, Admiral Togo, written by a Japansese, followed by "Fifty Years of Japan," from the pen of a Japansese journalist, Adachi Kinnosuke, who sums up in this paper the striking progress of his people during the half-century that has elapsed since the ships of Commodore Perry opened Japan to the influences of Western civilization. There are also brief summaries of "What the People Read in Japan," "Japanese Opinion of the American Attitude on the War," and "The Effect of the War on the Internal Affairs of Russia"; and Dr. Frank Waldo contributes an interesting résumé of "Climatic Features of the Field of the War."

The opening chapters of the May ATLANTIC are made brilliant and entertaining by the first installment of Professor Norton's series of "Letters of John Ruskin," illuminated by his own delight-

ful and illustrative comments and explanations. The series of articles on "Advertising," which has been so favorably received, is continued with a paper on "The Humors of Advertising," amusingly treated by Rollin Lynde Hartt. Other delightful essays are "An Hour with Our Prejudices," a characteristically humorous paper by Samuel M. Crothers; "The Work of the Woman's Club," by Martha E. D. White, and Bliss Perr's screed on "Fishing with a Worm," a very Waltonsey chapter written by a worthy disciple of the Gentle Art of Angling.

The June DELINEATOR contains a great deal of pleasant reading. Fashion's foibles, as here set forth by pen and pencil, are well designed to delight the feminine mind, as well as to prove a delusion and a snare to the masculine. There are besides a great many very pretty ideas in dresses for children, which will be welcomed by mothers. In the literary part of the magazine, the first place is given to a graceful Japanese tale, "The Giver of Honour," by Mrs. Hugh Frazer, a sister of Marion Crawford, which is refreshing in its sweetness and purity, and is sympathetically illustrated by Mr. C. D. Weldon. There are many other stories and articles for both little ones and grown folks and practical papers on domestic topics which go to make up a thoroughly readable number of this favorite magazine.

---

A CERTAIN NAVAL OFFICER was very pompous and conceited when on duty.

One day, when he was officer of the watch, and he could not, as usual, find anything of consequence to grumble about, he attempted to vent his spite on one of the stokers of the vessel who was in the engine room on duty.

Going to the speaking-tube, the officer yelled:

"Is there a blithering idiot at the end of this tube?"

The reply came quick and startling:

"Not at this end, sir!"

The feelings of the officer, as he turned away with a black frown, can be better imagined than described.

---

SUPERUNCONTRADISTINGUISHABILITIVENESS.

A person who hasn't the power
To distinguish the sweet from the sour,
Nor is able the sun from the shower
To easily guess,

Or one who's unable to tell
A rose from a cheese by the smell—
He has superuncontradistinguishabilitiveness.

Not to know at the critical time
The ridiculous from the sublime,
Not to know a Canadian dime
When it you possess,
Not to know that cold weather will freeze,
Or that hot weather won't—all of these
Show superuncontradistinguishabilitiveness.

This superuncontradistin-
guishabilitiveness is a thing
That's likely disaster to bring
Or remorse and distress;
In short, if you haven't the sense
To discover this poem's immense,
You have superuncontradistinguishabilitiveness.
—David H. Dodge, in the "New York Times."

---

PROCTOR'S THEATERS.

Elaborate arrangements have been made to meet the conditions and add to the safety and comfort of the patrons of Proctor's theatres during the summer season. Particularly worthy of commendation are the improvements at the One Hundred and Twenty-fifth Street Theatre, where among the decorations at the rear of each floor, a fountain has been added to the foyer of the orchestra floor. The evaporation from the constantly falling stream materially contributes to the coolness of the atmosphere.

It is also worthy of note that during the period for licensing theatres recently passed, not a single one of the Proctor houses was at any time in danger of losing its license, so careful Mr. Proctor has been to provide not only for the comfort but the entire safety of his patrons, and in such matters as interest the fire department and Health authorities, he has been in advance of restrictions; insomuch that when the Police Commissioner recently sat in judgment upon the various houses, although there were many threatened with extinction, Mr. Proctor's houses were not in any way molested. The Commissioner giving recognizance to the excellence of his management and the completeness of his system, so signally manifested on the outbreak of fire at the One Hundred and Twenty-fifth Street Theatre on the night of May 6.

Without the knowledge of any one in the theatre ("Herald" report) the fire had been burning for about ten minutes when Harry Brunell, the manager, was notified of it by several persons who saw the smoke and flames leaping from the windows of a storeroom on the top floor of the building fronting on One Hundred and Twenty-fifth street and directly in front of the theatre proper, from which it is separated by a four-foot fire wall.

Mr. Brunell hurried to the stage, and as he ordered the asbestos curtain to be lowered told the actors of the fire. Then, stepping into one of the boxes, he addressed the audience.

"There is not the slightest occasion for alarm," he said, "but I am informed that there is a fire in a neighboring building, and the Fire Chief advises that the audience leave the theatre, as in the course of time the fire may spread in this direction, and it is just as well to be on the safe side. I shall be obliged to you if you will quietly leave. All of the exits have been thrown wide open, and you will have no trouble whatever in getting out."

With a presence of mind which won him plaudits from the audience when they learned later how close the fire was to them, H. J. Smythe, leader of the orchestra, gave the signal to his men, swung his baton and an air which was familiar to every one was played with a rollicking swing.

Realizing the intent of it all, some one in the audience caught up the refrain, and the next moment a hundred voices were joining in the air.

Only one bit of excitement was furnished on the part of the audience, and that was immediately quelled. A man in the first balcony near the west side made a dash for an exit, shouting "Fire! Fire!" Hardly had the words passed his lips when he was felled by a blow from a stage hand and had to be carried out unconscious.

## UNIVERSAL EXPOSITION AT ST. LOUIS.

### DEPARTMENT OF SOCIAL ECONOMY—SECTION OF HYGIENE.

In all civilized countries, during the last three decades, public attention has been directed in a marked manner to the practical application of sanitary science to everyday life. Rural and municipal hygiene has made a great advance. In many European countries, practical sanitary laws have been passed and thoroughly enforced for the benefit of the people. In Mexico, progress of the highest order in public hygiene has been accomplished; also in

Peru, Chili, Argentina, and other South American countries. In the United States, all but three of the states have health laws and state boards of health, and commendable activity exists in disease-prevention work. Every town and city in most of these states has boards of health which are active in enforcing sanitation. Despite this progress, it is recognized that the great work is only begun. The possibility of preventing disease has been made plainly apparent, and therefore more imperative, by the science of bacteriology and the development of the germ theory and the discovery of some causes and methods of infection. The gathering together, therefore, of a comparative exhibit showing the best that has been done in hygiene the world over, is certain to result in a great lesson. Such exhibit will make it possible for all persons to see and comprehend the importance and extent of the subject of hygiene, and will furnish opportunity to hygienists themselves to enlarge and perfect their knowledge of the subject.

For the purpose of comparing the best methods and appliances known to sanitary science to secure health conditions and for the promotion and improvement of the principles of disease prevention, all foreign boards of health, all provincial, state and municipal boards of health, colleges and schools of hygiene, sanitary societies, publishers of books on hygiene, sanitary engineers, inventors of sanitary machinery and appliances, and, indeed, all who are in any way connected with hygiene work, are invited to make exhibits in this department.

### Character and Scope of Exhibit.

A review of the classification which follows will give an idea of what the exhibit will include. As vital statistics constitute the foundation of hygiene work, special attention will be given to illustrating the subject. To this end, all the registration countries and states will be urged to make full exhibits. This will include their laws, rules, methods of collecting vital statistics, methods of tabulation, analysis and reporting. There will also be exhibited the health laws and rules of foreign countries and all the states; also city health ordinances, full sets of reports, methods of administration and results.

Hygiene literature, such as publications of sanitary associations, essays, works on hygiene and sanitary science, etc., will be on file. There are already promised, and now in course of preparation, full and costly exhibits illustrating the propagation of vaccine, diphtheria antitoxin, and all prophylactic serums. It is expected that

this exhibit will be of extra interest. Prominent sanitary engineers have promised to show plans, specifications, elevations and photographs of water-filter plants, both of the mechanical and sand-bed kinds; also of septic tanks, broad irrigation, sand filtration, and chemical methods of sewage disposal. Photographs, plans and specifications of plants already in operation will also be shown.

The foreign and home schools of hygiene will be fully represented, and this exhibit will be of unusual value—for all advance in hygiene, as in other sciences, lies in education and discovery. Emergency hospitals, sanitary tenements, sanitary dwellings, home sanitary appliances, garbage collection and disposal, ventilation, lighting and heating of school-houses, theaters, churches and other public buildings, railway sanitation, disinfection, disposal of the dead, etc., will all be completely illustrated.

### A Hygiene Laboratory.

An important feature of the hygiene exhibit will be a modern, completely equipped, hygiene laboratory, in working operation. In it will be continually conducted all manner of actual chemical and bacteriological examinations which are required in modern disease-prevention work. Arrangements will be made with the health authorities of cities, towns and country within five or six hours' reach of St. Louis, to send in diphtheria and scarlet fever cultures, samples of blood for malaria and typhoid tests, sputum for pneumonia, influenza and tuberculosis tests; also waters for chemical and bacteriological examination, and food and drugs for chemical analysis. In addition to notification of results to the senders of specimens, bulletins will be issued for the inspection of visitors. It is expected the laboratory and its practical work will be valuable in showing to all officials and other citizens how necessary such an institution is if preventable diseases are to be efficiently opposed.

### GROUP 140.

Class 791.—(*a*) *Sanitary Legislation.* Laws, ordinances, by-laws, rules, under which exhibiting health boards work.

Class 791—(*b*) *Investigation.* Explanation, records, charts, illustrations of investigations.

Class 791—(*c*) *Literature.* Reports of health boards, sanitary reports of national governments, works on hygiene and sanitary science, reports of sanitary societies, health circulars, essays on health, works on foods, etc.

Class 792—(*a*) *Prevention of Infectious Diseases.* Methods of discovery and reporting of incipient and pronounced cases of in-

fectious diseases, methods of isolation and quarantine, use of vaccines and prophylactic serums, disinfection, infectious disease hospitals and rules for management, laboratory work, destruction and exclusion of insects.

CLASS 792—(*b*) *Municipal Sanitation.* Street paving, street cleaning, garbage collecting, garbage disposal, sewers, sewer cleaning, hospitals, dispensaries, disinfecting stations, portable disinfecting apparatus, public drinking fountains, parks, public baths, public sanitaries, tenements.

CLASS 792—(*c*) *Sanitary Engineering.* Plans, specifications, elevations, photographs of methods of sewage disposal. Also plans, etc., of plants for the purification of water, as sand filtration, mechanical filtration, electrical purification. Plans of sewer systems, best materials for construction, etc. Descriptions and photographs of water sheds. Preservation of streams from pollution. Preventing smoke nuisances.

CLASS 792—(*d*) *School Sanitation.* Plans, elevations, specifications, photographs, illustrating sanitary schoolhouses. Medical inspection of school children, physical training, proper seats and desks, print of school books. Drinking fountains. Sanitaries.

CLASS 793—(*a*) *Industrial Sanitation.* Regulations governing the sanitary conduction of industries. Ventilation, warming and lighting of factories and work rooms. Fire escapes and other safeguards against accident and disease. Production of vaccines, prophylactic and curative serums. Car sanitation, boat sanitation, sanitary care of public vehicles.

CLASS 793—(*b*) *Home Sanitation in Villages and Country.* Plans, specifications and elevations of an ideal sanitary house or dwelling. Foundations, cellars, heating, ventilation, lighting, plumbing, disposal of sewage and slops, water supply, kitchen, bathroom, bedrooms, clothing, exclusion of dust and insects. All to be illustrated by drawings, models, photographs.

CLASS 793—(*c*) *Domestic and Public Hygiene Appliances.* Street cleaning machinery, garbage carts, models of garbage crematories, sections and models of street paving, ash and garbage receptacles, ventilating grates and stoves, furnaces, cooling appliances, domestic water filters, refrigerators, domestic water-stills, domestic garbage burners, commodes, earth closets, insect screens, etc.

CLASS 794—*Food and Drug Inspections.* Pure food and drug laws, rules and regulations for enforcement. Explanation of methods of collection of food and drug samples. Analyses, reports,

prosecutions. Printed reports of results. Amount of money allowed for the work.

CLASS 795—*Vital Statistics.* Laws, rules and ordinances governing the collection of vital statistics. Methods for collecting, tabulating, classifying, analyzing, etc. Forms of blanks used, published results and graphic charts. Calculation of death, sickness, birth and marriage rates.

CLASS 796—*Disposal of the Dead* (Earth Burial). History. Arguments for and against, with illustrations. Burial of bodies dead of dangerous transmissible diseases. Best kind of soil. Modern embalming with consequent retardation of destruction. Sites for cemeteries. *Cremation*—Literature concerning cremation. Photographs, plans, elevations, specifications of crematories; also descriptions and illustrations of furnaces and all accessories.

J. N. HURTY, M. D.
*Superintendent Section of Hygiene.*

## AMERICAN INTERNATIONAL CONGRESS ON TUBERCULOSIS.

To be Held October 3, 4 and 5, 1904, Under the Auspices of the Universal Exposition, at St. Louis, 1904, and of the American Congress on Tuberculosis.

HONORARY PRESIDENTS:

| *Lay.* | *Medical.* |
|---|---|
| Hon. John Hay, | Prof. Dr. M. Benedikt, |
| Hon. Gen. Russell A. Alger, | Dr. A. N. Bell, |
| Hon. Ex-Judge A. H. Dailey, | Prof. Dr. Chas. H. Hughes, |
| Hon. Judge C. G. Garrison, | Gen. Presley M. Rixey, M.D. |
| Hon. Stephen B. Elkins, | Gen. Nicholas Senn, M.D. |

OFFICERS:

President, E. J. Barrick, M.D., Toronto, Ontario.
First Vice-President, F. E. Daniel, M.D., Austin, Tex.
Second Vice-President, Ex-Chief Justice L. Bradford Prince, Santa Fe, N. M.
Third Vice-President, Dr. Charles K. Cole, Helena, Mont.
Fourth Vice-President, Dr. Sofus F. Nelson, Pulman, Wash.
Fifth Vice-President, Dr. A. M. Linn, Des Moines, Iowa.
Secretary, Samuel Bell Thomas, 116 Nassau St., New York.
Treasurer, Clark Bell, 39 Broadway, New York.

## THE SANITARIAN.

MY DEAR DR. BELL:

In compliance with your request for my appreciation of THE SANITARIAN from my viewpoint as associate editor for more than twenty years, on the eve of your retirement and the merging of THE SANITARIAN with "The Popular Science Monthly," I will endeavor to do so as tersely as I may by excerpts from its pages, with which I heartily concur, but to which I would add, if I could command words of more exalted significance.

THE SANITARIAN from the outset, indeed from its announcement by prospectus in February, 1873, for the terseness of its stated purpose, "to so present the results of the various inquiries which have been, and which may hereafter be made for the preservation of health and the expectations of human life, as to make them most advantageous to the public and to the medical profession; to awaken public attention to the extent of the field, and to the facts indicating how beneficently it may be cultivated, by showing the amount of ill-health and mortality from preventable causes of disease; by pointing out the nature of those causes and the way in which they operate; by showing that such causes are removable, and by exhibiting improved health, longevity and happiness as the fruits of their removal."

This announcement, as shown by the correspondence in the early numbers, attracted the attention of many distinguished members of the medical profession and other persons, who have here given thought to the possibilities of preventive medicine.

How well THE SANITARIAN has accomplished its purpose is measurably shown by letters addressed to the editor in June number (vol. 28), 1892, occasioned by an article in the same number taken from the "Brooklyn Medical Journal" of two months before, on "The Practical Sanitarian as Illustrated by a Life Sketch of A. N. Bell, A.M., M.D., by Stephen Smith, A.M., M.D., LL. D. The inference from Dr. Smith's article, written nineteen years subsequently to the advent of THE SANITARIAN, would, at first thought, seem to suggest that it was a sequel of what THE SANITARIAN had accomplished. But, on the contrary, it shows the basis of it, which the editor had taken no pains to make known at the outset of THE SANITARIAN, with evident purpose, as he in substance announced that THE SANITARIAN should speak for itself.

The general appreciation of it at that time, and it has in no respect lessened since, is abundantly shown by the letters referred to, in part, as follows:

ELMIRA, N. Y., May 6, 1892.

Editor of THE SANITARIAN:

It is needless to state that "all sorts and conditions of men" have profited by your labors in behalf of sanitary reform. Individually and through your journal sanitation, in the direction of school-children, has witnessed development from small beginning up to the present advanced state of knowledge on the subject, by which the health of innumerable pupils has been preserved and education made possible, which otherwise would have been unattainable. This is only a single instance of what has been accomplished by means of enlightened sanitary inquiry, which in the manner of "line upon line, precept upon precept, here a little and there a little," has forced itself upon the attention of the medical profession. This branch of inquiry, which is mentioned by way of illustration, including the site and construction of schoolhouses, water supply, drainage, cubic space, the admission of light, building of desks and seats, hours of study, and physical training, shows the scope of investigation which has characterized THE SANITARIAN during the many years its pages have teemed with questions of the most vital importance.

When we consider the wide range of topics that has filled the pages of THE SANITARIAN on questions embracing the health and welfare of the people, a summary is presented of the history of a particular field of inquiry, encyclopædic in character, which cannot be furnished in any other form. Indeed, the volumes of THE SANITARIAN constitute, in a shape available for ready reference, a complete presentation of what has been contributed to preventive medicine since you undertook to lead scientific investigation in the department you have been found so capable of illustrating.

WILLIAM C. WEY.

MEDICAL DEPARTMENT, TULANE UNIVERSITY OF LOUISIANA,
NEW ORLEANS, April 23, 1892.

DEAR DR. BELL: I take this opportunity to assure you of my highest appreciation of your erudition and experience as a sanitarian, and of the great value, unequaled in the United States, of your monthly publication, THE SANITARIAN.

STANFORD E. CHAILLÉ.

NEW YORK, May 2, 1892.

DEAR DR. BELL: I congratulate you on the well-merited tribute accorded you by Dr. Stephen Smith, in the April number of the "Brooklyn Medical Journal," and upon the ability with which you have conducted THE SANITARIAN, now in the twentieth year of its existence. Each successive number has shown your untiring devotion to preventive medicine, and to say that THE SANITARIAN occupies the first place among the periodicals of its class is very far from overestimating its value as a practical and popular educator in all matters relating to public health. On its pages have been reported from time to time transactions of the various learned bodies whose labors are devoted in whole or in part to the improvement of human conditions, thus bringing readers in close relation to the best thinkers and workers of the age. In turning over its leaves one finds that it has recognized and supported every public movement promotive of the interests and welfare of the people. This is especially shown by the energy it has displayed in the organization of national, State and municipal boards of health, and voluntary health associations as means of securing a wise system of sanitary administration, and creating a popular interest in those subjects which relate to the prevention of disease and the saving of life. Public health administration has at all times been carefully reviewed, and wherever criticism has been deserved, your dearest personal friends have not escaped the strictures of your just, even though it be somewhat caustic, pen.

The subject of house sanitation has at all times received due attention, and you have kept pace with the most advanced views on this important branch of domestic hygiene. The same may be said of school hygiene, in the advocacy of which you have always been found at the front.

In the field of scientific investigation your readers have been kept well informed of the results of bacteriological study, the gradual growth and development of the germ theory; the value, use, and methods of employing antiseptics and disinfectants, detailing at length the results of experiments in testing the relative efficiency of the several agents used in this department of sanitary science and effective practical work.

The growing interest in matters pertaining to public health which THE SANITARIAN has done so much to foster is seen in the public press, heard from the pulpit and platform, and is especially shown by the establishment of professorships in medical, literary and technical institutions.

But neither time nor space will allow me to notice the many other features which render THE SANITARIAN indispensable to one who reads it—as I have for the last nineteen years; but I venture to suggest that every practical sanitarian who has frequent occasion to refer to his back volumes will soon need an index volume to aid him in such reference. If such a volume could be prepared, giving a brief epitome of the more important articles, I am sure your subscribers would support you in the undertaking.

E. H. JANES.

(Assistant Sanitary Superintendent, Department of Health, New York.)

NEW YORK, May 3, 1892.

MY DEAR DR. BELL: I have read with great interest Dr. Stephen Smith's interesting account of your life and life-work as a practical sanitarian. Certainly no man in this country has done more than yourself to call public attention to the importance of general sanitation, and inculcating individual sound doctrines in your writings upon these important subjects will not be questioned by any sanitary expert.

I trust that your valuable journal, THE SANITARIAN, may remain under your direction for many years to come, in which case it will no doubt maintain the position which it has attained as the leading sanitarian periodical in America.

GEORGE M. STERNBERG,
Deputy Surgeon-General, U. S. Army.

COLDWATER, MICH., May 3, 1892.

MY DEAR BELL: I have read Dr. Smith's paper in the April number of the "Brooklyn Medical Journal." To show what THE SANITARIAN alone has done would require an index catalogue. If it were read and consulted, and the suggestions it suggests, the helps that help, and the advice that advises, applied in their usefulness, sanitation would be more advanced. Let us be thankful that you have done so much so worthily. T. J. TURNER,
Medical Director, U. S. Navy.

To the foregoing—and I wish I had room for more—permit me to add a condensed abstract of your address at the "Quarter Centennial Celebration of the Michigan State Board of Health," August 9, 1898. It is a virtual summary of the status of sanitary science at the end of the last quarter of the nineteenth century:

and, it appears to me, eminently suited to the merging of THE SANITARIAN with its contemporary, *"The Popular Science Monthly."*

A QUARTER CENTURY OF SANITARY WORK.

" . . . For, while I concur with the general belief that of all the centuries since the first one of the Christian era, there has been greater progress in civilization in the present one than in any other, I venture to think, and shall endeavor to show, that of all the pursuits of knowledge that have contributed to human welfare, preventive medicine excels; and the more because it has been the chief means by which the art of medicine has been transformed into a science.

"The advent of cholera in England in 1831, despite the quarantine regulations which at that time obtained, gave Edwin Chadwick occasion to observe that whatever infections property there might be in the disease, it was particularly prone to prevail under filthy conditions.

"It was no new thing that dirt propagated disease, but why had never been searched for. And the good results of the energy displayed by Mr. Chadwick and his co-workers appears for the time to have stifled scientific inquiry.

"It is an especially noteworthy circumstance that the General Board of Health did not then have, and had not had hitherto, a medical man among its members or officers. And that it did not have a medical member until in 1850.

"Dr. Rumsey, referring to this subject some years later in the preface of his 'Essays on State Medicine,' speaks of it in the following terms: 'Who would have thought that in the last decade of advancing civilization, and in a nation boasting of its intellectual and material resources, of its administrative energy and efficiency, the whimsical experiment should have been actually tried of appointing three non-medical authorities—two lords and a barrister—to preserve the health of the living; and then, after a year or so of doubtful success, calling in a physician to bury the dead."*

"Indeed it appears that what Lord Bacon said of the medicine of his day, that it stood for judgment on quite different merits than did other learned pursuits, was scarcely less true at the beginning of this quarter-century than at the time of his utterance.

" 'Other arts and sciences,' he said, 'are judged of by the power

* English Sanitary Institutions. John Simon, p. 219.

and ability exhibited in the conduct of them by their professors, and not by success or events. The lawyer is judged by the skill of his pleading, not by the issue of the trial; the pilot by his skill in directing the course of his ship, not by the fortune of the voyage. But the physician can form no particular act by which his ability can be directly demonstrated, and therefore he is principally judged by the result, which is very unjust. For who shall decide, if a patient die or recover, whether the good or the evil is brought about by art or by accident? Whence imposture is frequently extolled and virtue decried. Nay, the weakness and credulity of men is such that they often prefer a mountebank or a cunning woman to a learned physician. So the accidents made Æsculapius and Circe brother and sister and both children of Apollo. Hence,' he adds, 'physicians say to themselves, in the words of Solomon: "If it befall to me as befalleth fools, why should I labor to become more wise?" And therefore one cannot wonder that they commonly study some other art or science more than their profession, because they find the mediocrity and excellence in their own art makes no difference in profit or reputation, for man's impatience of diseases, the solicitude of friends, the sweetness of life, and the inducements of hope, make them depend upon physicians with all their defects.'

"With a few exceptions, this estimate of the art of medicine by Lord Bacon obtained until the eve of the quarter-century of our particular consideration. Omitting the rest, one exception is preeminently worthy of mention—Jenner's discovery of vaccination—for never was discovery more thoroughly demonstrated on a scientific basis than this, based on a considerable period of observation and repeated experiments before it was announced. It was a contribution toward, though not to, the science of medicine. It stood alone for half a century.

" 'The vaccine disease, in my opinion, is not a prevention of the smallpox, but the smallpox itself—that is, the horrible form under which it appears in its contagious state is (as I conceive) a malignant variety. Now, if it should ever be discovered that the plague is a variety of some milder disease, generated in a way that may even elude our researches, and the source should be discovered whence it sprang, this may be applied to a great and grand purpose. The phenomena of the cow-pox open many paths for special action, every one of which I hope may be explored.'

"Yet there was no attempt made to attenuate other diseases besides smallpox, as suggested by Jenner, until it was brought about

by Pasteur's researches into the causes of certain forms of disease in French vineyards. There were earlier discoveries of bacteria by Leeuwenhœck and others, in almost every kind of organic matter in process of decomposition, but the part they played in disease was not even hinted at.

"In 1840 Henle announced that the cause of miasmatic infective contagious diseases must be looked for in similar minute living organisms. He was unable to offer any satisfactory experimental proof of his theory, however. But his argument in favor of it created a profound impression, and from that time forward greatly increased attention was given by medical and other microscopists to all infective diseases.

"In 1862 Pasteur published his paper on organized corpuscles existing in the atmosphere, and by a series of experiments showed that unless organisms were introduced into the organic fluids from without, by some means or other, no putrefaction could take place —that is, until some organisms were present which could grow and multiply in the fluid, no evidence of organic life would make its appearance.

"This paper of Pasteur on 'Organized Corpuscles in the Air' was the prelude to Professor Lister's experiments on the antiseptic treatment of wounds, first undertaken three years after Pasteur's paper. His experiments at the first were crude and difficult of application, but with a persistence commensurate with his nobleness of purpose, after two years' perseverance he had rendered them so facile and so successful in his hands that, in 1867, he insisted upon the importance of excluding special bacterial organisms from wounds.

"It is no disparagement of the brilliancy of the results of following Professor Lister's practice in the application of knowledge of disease germs and germicides, *drawn from the store of facts developed by sanitary work,* to surgical procedure, to invite attention to the even more brilliant results that have followed the like recourse to Professor Lister's by medical practitioners. The brilliancy of the surgical results is more apparent only because it is more easily demonstrated than the results of medical practice.

"In 1872 Bollinger demonstrated the presence of spores in the bacillus anthracis. He also showed that if blood from a cow affected with splenic fever were kept for some time, the rods disappeared, but the blood still retained its virulence. This virulence he attributed to the presence of spores, which, though remaining inactive under unfavorable conditions to the existence of the anthrax

bacillus, still retained their vitality; and by the recurrence of conditions favorable to their development they assumed the form of the bacillus and were then capable of setting up the disease. He pointed out the important bearing of this retained vitality of germ spores on the question of infection of the soil; and, by indicating that the so-called epidemic diseases were due to the fact that the conditions were favorable or otherwise—perhaps intermittently—for the growth and development of anthrax organisms, he not only discovered the etiology of those diseases, but, by pointing out the conditions under which the vitality of their germs were maintained, he displayed the feasibility of preventing or stamping out such diseases by sanitary work.

"Closely related in substance to Bollinger's discovery were Dr. George M. Sternberg's observations on the soil in New Orleans, as reported by him to the National Board of Health in 1881. 'The fact observed by myself,' he says, 'that during the summer months the mud in the gutters of New Orleans possesses an extraordinary degree of virulence, shows that pathogenic varieties of bacteria are not alone bred in the bodies of living animals. The more I study this subject the more probable it seems to me that in this direction lies the explanation of many problems which have puzzled the epidemiologists, and that the sanitarians are right in fighting against filth as a prime factor in the production of epidemics—a factor of which the rôle is easily understood, if this view is correct. The presence of septic organisms possessing different degrees of virulence, depending upon the abundance and kind of papulum furnished them, and upon meteorological conditions more or less favorable, proves, in my opinion, the epidemic constitution of the atmosphere, which wise men were wont to speak of a few years ago as a cloak of ignorance. It must be remembered that the gutter mud of to-day, with its deadly septic organisms, is the dust of to-morrow, which in respiration is deposited upon the mucous membrane of the respiratory passages of those who breathe the air loaded with it.'

"Moreover, foremost in sanitary work for the time being, in the quarter-century of our contention, was that as a whole, which the paragraph just above quoted brings to mind, the work of the National Board of Health during the period of its active existence, 1879-81. How earnestly and successfully it battled with and stamped out the yellow fever in Memphis and New Orleans, is popular history. But this was but a mere item of its work. It promptly revised the situation and appointments of the quarantines

of the Southern Atlantic and Gulf ports; established refuge stations for infected vessels; instituted sanitary inspection of vessels, railways coaches and persons at infected ports and places of departure; established a sanitary police of the lower Mississippi, in time of yellow fever at any port or landing place thereon; required thorough cleansing, disinfection and aeration of all houses, river vessels and boats, in which there had been cases of yellow fever. To notice in detail the investigations made by Drs. Chaile and Sternberg in fevers; Drs. Wood and Formand on diphtheria; Professors Remsen and Smyth on the dangers of carbonic oxide and soil gases; Professors Mallet, Martin and Pumpelly, on the organic matter in potable water; Colonel Waring and Mr. Bowditch's report on sewerage and drainage in the United States; Mr. Rudolph Herring's report upon sewerage works in Europe, and many other scientific investigations conducted under the auspices of the Board and their practical results, would require much more space than this occasion affords.

"In 1875 Klebs first described the bacillus of typhoid fever, and again, with Eberth, more accurately, in 1880; in 1884 Koch demonstrated the bacillus of cholera, and Loeffler that of diphtheria; but it is needless to pursue this category, literature with which we are all familiar is filled with it. Equally important to our contention is the relation of these discoveries to measures for their prevention or destruction. Hitherto the use of disinfectants had been an art only and empirical. Certainty of their utility awaited their application to disease germs as a test of their efficiency, and thus disinfection has become a scientific procedure. Steam had been used to a limited extent and had won the confidence of all who used it by its recognized result as an efficient disinfectant, for many years, but it was not until 1884, when Dr. Sternberg reported that by actual experiment it was fatal to all of the pathogenic and non-pathogenic organisms tested, in the absence of spores (with the single exception of sarcina lutea), at a temperature of 143.6°, which placed its use on a scientific basis, that it has since that time been generally accepted.

"Efforts for the protection and purification of water supplies seem to have awaited conditions somewhat analogous to the use of disinfectants—the discovery of disease germs in polluted water. At any rate, it is only since the discoveries of Eberth and Koch that chemists and engineers have become convinced that sewage is unwholesome, no matter how much diluted.

"Allied to the protection of the water supplies is the protection

of milk and other food supplies, which has been a signal illustration of sanitary work, State and local, so extensive and so generally acknowledged as to require no details.

"And what may now be said of the crusade that has but just now begun, as it were, against tuberculosis, omitting any attempts to discuss that phase of it which has been in progress for several years in the destruction of cattle—further than to rivet attention, if possible, to the liability of children to intestinal tuberculosis, and since children are the great milk consumers—to insist upon this fact as a sufficient justification of the destruction of tuberculous cows, and for the most rigid supervision of the milk supply by the sanitary authorities.

"But our present reference is more particularly to Koch's discovery of the tubercle bacillus fifteen years ago. And since the recognition of the communicability of tuberculosis by the inhalation of the baccilli from the dried dust of the sputum of consumptives. the question of how to prevent this danger with the least possible inconvenience to the afflicted is one of the most important problems of practical sanitation. That there are various means adaptable to the different conditions of exposure and the proper care of consumptives, subject to sanitary supervision, every sanitarian knows. And the salutary results are proven by the diminishing death rate from consumption wherever it has been imposed. The restrictive measures of sanitary authorities in this regard have been an educational force among the people at large. And no persons have become more keenly alive to the danger of tuberculosis sputum than consumptives themselves, who would be the last to afflict in like manner those who are dear to them or other persons. While, therefore, their sensitiveness in this regard should always be respected, the day has gone by—even with them—when such sensitiveness should be an obstacle to the protection of human life. Consumption is no longer regarded as a family disease—much less a community disease—but a personal one; a disease that is ordinarily contracted by inhaling the dust of dried sputum, and above all by persons whose resisting powers are below par from any cause, though no person, however well, can be considered absolutely exempt from the danger of such exposure.

"When we consider that an impure atmosphere is one of the most favorable conditions for the propagation of tubercle bacilli and reflect upon the facility of their reproduction and marvelous distribution, we may well wonder how is it possible to escape them. Indeed, it is impossible. But from the scientific basis on which

preventive medicine rests, we can fight them, and though we may not be able to subdue and conquer them, we can so cultivate our powers of resistance to them as to measurably defy them.'

"*Stamina* is an educational force of primary importance to both body and mind. All understand that a pure atmosphere is essential to the maintenance of health. But, owing to the wonderful facility which the human body possesses of accommodating itself to circumstances, it frequently happens that school assemblies breathe a most unwholesome atmosphere day after day, or perhaps for weeks, without apparently suffering from it, while one after another of the pupils is continually dropping out—overtaken by some epidemic disease.

"Sanitary work has been not only eminently successful in the promotion of school hygiene in the United States during the era of our consideration, so evident that he who runs may read, but it has concerned itself with eminent success in the promotion of medical education.

"All of our State laws for the prevention of quackery, commonly designated Medical Practice Acts, are chiefly, if not wholly, due to the influence of our State Boards of Health. With special reference to the leading spirit in the promotion of the Medical Practice Acts, the late John H. Rauch, we know of no better description of the relation of such Acts to sanitary work than the summary prefacing the Sixth (1883) Annual Report of the Illinois State Board of Health:

"'Boards of Health are created and maintained for the conservation of the interests of health and life. Ordinarily their functions are limited to dealing with sanitary questions; with the removal of the causes of preventable disease and premature death. This Board, however, is also charged with the execution of the Act to regulate the practice of medicine in the State; and thus the medical profession, one of the most important agencies which is concerned with the interests of health and life, is brought within the scope of sanitary legislation. To improve the status of the individual practitioner, and to develop a well-trained and thoroughly educated medical profession, must result in increasing the value of this force in sanitary science and public hygiene; a force which in the nature of things must always exist so long as there are physicians and patients; and the character and influence of which must always hold a direct relation to the tone, attainments, and the competency of those by whom it is exerted.'

"In an address Dr. Rauch delivered as Chairman of Section of

State Medicine, at the session of the American Medical Association in 1886, he submitted certain propositions which he considered germane to needful action of that body in the promotion of the highest attainable standard of medical education, and in order to give practical effect to them he specifically suggested:

" 'That the American Medical Association should put itself upon record at that session as recommending the extension of the period of study to four years, and of attendance upon lectures to three full terms, with ample hospital practice and clinical instruction, as the requirements for graduation in medicine.'

"The Association did not so put itself upon record until six years afterward. But Dr. Rauch ceased not to so urge to the day of his death. At the recent meeting of the Association in Denver Dr. Rauch's suggestion was unanimously adopted by special resolutions.

"Well did Tyndall observe, as a physicist twenty-three years ago: 'If recent theories on the propagation of disease by germs were proved to be correct, and if the laws which govern the propagation or destruction of those germs were known, the art of the physician would be raised from dependence on empirical observation into the position of an exact science. * * * For never before,' he said, 'was medicine manned and officered as it is now. * * * On the old Baconian lines of observation and experiment the work is carried on. The inter-communication of scientific thought plays here a most important part. * * * While physiologists and physicians in England and elsewhere were drawing copiously from the store of facts furnished by the researches of Pasteur, that admirable investigator long kept himself clear of physiology and medicine. * * * The union of scientific minds is, or ought to be, organic. They are parts of the same body, in which every member, under penalty of atrophy and decay, must discharge its due share of duty imposed upon the whole. * * * In observational medicine one fine piece of work may be here referred to—the masterly inquiry of Dr. Thorne into the outbreak of typhoid fever at Caterham and Redhill. Hundreds were smitten by this epidemic and many died. The qualities of mind illustrated in Dr. Thorne's inquiry match those displayed by William Budd in his memorable investigation of a similar outbreak in Devonshire. Dr. Budd's process was centrifugal—tracing from a single case in the village of North Lawton the ravages of the fever far and wide. Dr. Thorne's process was centripetal—tracing the epidemic backward from the multitude of cases first presented to the

single individual whose infected excreta, poured into the well at Caterham, were the cause of all.'

"Finally, my friends, the good time a-coming, announced by Tyndall twenty years ago, has arrived! The sanitary work of the quarter-century of our contention with correlation with the facts it has evoked in conjunction with collateral delvers into the foul soil it has cleansed, into the impure waters it has clarified, into the marshes it has drained, the air that it has screened from malignant organisms are the notes of its triumphant song in praise of sanitary methods. Yours truly,

"T. P. CORBALLY, M.D."

To the foregoing summary by my esteemed associate, to whom I am under lasting obligations for aid in the declared purpose of and for the results achieved by THE SANITARIAN, I have but little to add.

Contemporaneously THE SANITARIAN and "The Popular Science Monthly" (beginning just one year before THE SANITARIAN) have maintained most congenial relations, but time now calls for change of conditions.

The opposite page is self-explanatory. Sanitation has lost none of its attractiveness to the subject of the picture, by his many years devotion to the means of promoting health and longevity. Quite the contrary, indeed. But all the while Prospect Park has become more and more alluring in the recurring season of fragrant flowers and singing birds, hence he has now arranged for a rest. Has merged THE SANITARIAN with "The Popular Science Monthly," which takes up its rôle.

The retired editor, still being blessed with good sight, promises occasional contributions.

All correspondence, business communications and subscriptions *beyond those already made for* THE SANITARIAN should be addressed,

THE POPULAR SCIENCE MONTHLY,
Sub-station 84, New York City.

All subscriptions *due for* THE SANITARIAN and all personal correspondence for the undersigned should be addressed as heretofore—337 Clinton street, Brooklyn, N. Y.

A. N. BELL, M.D.

# INDEX.

A Certain Naval Officer's Irritability, 549.
Accident, Record of Deaths by, in New York City, 75.
Adulteration of Food and Drugs, The, Bill for Preventing, 431.
Adulteration of Food in New Hampshire, 530.
After Death, Life—"The United Presbyterian," 546.
Alcohol Fight Succeeds in England, 257.
Alcohol Substitute, An, 226.
Alcohol, To Make, Undrinkable, 51.
American International Congress on Tuberculosis, 555.
Anæsthesia, Local, Connell, 255.
Anæsthetic, A New, 351.
Appendicitis, Gangrenous, Reynier, 46.
Appendicitis in the Army, Chauvel, 46.
Appendicitis, Suppurating, Opening into the Bladder, Fortuna, 158.
Associations, Conventions, Etc.:
American Climatological Association, 479; Conference of State and Provincial Boards of Health of North America, 128; French Congress on Climatology and Urban Hygiene, 274; International Congress on School Hygiene, 275; International Congress on Tuberculosis, 63, 85, 555; International Congress on Tuberculosis and Dr. Knopf, 163; The Maryland Tuberculosis Exposition, 385, 450.
Asthma, Pseudo, Hayem, 251.

Barlow's Disease, Triboulet, 250.
Bashore, H. B., Sanitary Relations of the Soil, 42; Thoughts on Market Hygiene, 243.
Beans versus Literature, 190.
Beer Bottles, A House of, 52.
Bell, A. N., Infectious and Contagious Diseases, 289; Our Homes and Ourselves, 3.
Bell, A. N., Consolidation of The Sanitarian with "The Popular Science Monthly," 568.
Bell, A. N., Portrait of, 568.
Bell Mettle, 64.
Bible, The, Nicholas Murray Butler, 548.
Biliary Lithiasis, Cure of, by Chologene, Gaudin, 437.
Biography of a Fool, 540.

Book Reviews:
Adirondack Cottage Sanitarium, 471; American Society for the Prevention of Cruelty to Animals, 471; American Year-Book of Medicine and Surgery (Gould), 378; Atlantic Monthly, 286, 549; Baby, The, Practical Care of (Kilmer), 185; Bacteria, Yeasts and Molds in the Home (Conn), 185; Blues, The (Abrams), 279; Children of the Tenements (Riis), 182; Climatology of California (McAdie), 380; Consumption, The Self Cure of, Without Medicine (Davis), 281; Declaration of Independence, 469; Delineator, The, 549; Diagnosis from the Eye (Lane), 543; Diseases of Metabolism and Nutrition (Von Noorden), 90; Diseases of the Ear, Nose and Throat (Kyle), 91; Diseases of the Eye (Fox), 280; Diseases of the Horse (Department of Agriculture), 91.; Diseases of the Prostate Gland and Adnexa, A Non-Surgical Treatise on (Overall), 90; Disinfection and the Preservation of Food (Rideal), 276; Elements in Water Bacteriology (Prescott), 541; Foundation of All Reform, The (Carque), 543; Infant Feeding in Its Relation to Health and Disease (Fischer), 469; Infection and Immunity (Sternberg), 184; Japanese Physical Training (Hancock), 89; Manual of Hygiene and Sanitation (Egbert), 281; Manual of Materia Medica and Pharmacy (Muir), 542; Medical Library and Historical Journal Quarterly, 473; New Jersey Training School for Feeble-Minded Girls and Boys, 470; New York State Hospital for Crippled and Deformed Children, 283; New Zealand, The Story of (Parsons), 376; Oppenheimer Institute, 92; Plain Hints for Busy Mothers (Wheeler), 282; Pompous Naval Officer, 549; Post-Graduate Hospital Report, 91; Practical Hygiene for Students, Physicians and Medical Officers (Harrington), 279; Progressive Medicine, 379; Publications Received, 96, 188, 444, 473; Report of the Bureau of Animal Industry, 187; Report of the Commissioner of Education for 1902, 186, 379; Report on Fisheries and Game in Massachusetts, 543; Report of the Surgeon-General of the Public Health and Marine Hospital Service of the United States, 380; Review of Reviews, The, 548; Roentgen Ray Diagnosis and Therapy (Beck), 542; The International Medical Annual, 469; Therapeutics of Mineral Springs and Climates (Yeo), 541; Treatise on Nervous Diseases (Pearce), 377; Tuberculosis, A Handbook for the Prevention of (Church Organization Society), 282; Weather Folk-Lore and Local Weather Signs (Garriott), 379; World's Commerce and American Industries (McFarlane), 188.

Books, The Fifty Best, 478.
Brackett, E. A., To-Day, 258.
Brain-Fag, and Its Effects on Health, Knott, 108.
Bronchoscopie, La, Lemoyer, 252.

Bryce, P. H., Relative Frequency of Contagious Diseases in Children of School Age, 497.
Buried Alive—The Coroner's Office, 520.
Butter-Making in Canada, Johnson, 41.

Carburetted Air Light, Marshall, 441.
Carnegie Institution, The, 164.
Car, Pullman, a, How, is Cleaned, 62.
Catarrh, Nasal, Treatment of, Mannon, 159.
Celluloid Doll Heads, Danger in, 168.
Cephalo-Rachidian Liquid, the, Circulation of, Cathelin, 49.
Children, A New Physical Culture for, 287.
Children, Naughtiness in, 336.
Child-Saving Laws Sustained, 444.
Cholera in the Philippines, 369.
Cider and Jam in England, 302.
Circulation, The, in the Secretion of the Urine, Lamy and Mayer, 156.
City, a Great, Some Problems of, Warner, 424.
City Lots, Vacant, Utilizing, 383.
Cocaine is Not Coca, 256.
Collargolum by Intravenous Injections in Erysipelas, Coleman, 159.
Complexion, the, The Care of, 191.
Co-operative Agencies for the Extension of the Registration Area and Improvement of Vital Statistics, King, 535.
Copyright, International, 382.
Corbally, T. P., Medical Excerpt, 46, 156, 249, 348, 437.
Corbally, T. P., THE SANITARIAN—Appreciation of, 556.
Coroners, the, The Passing of, 449.
Crosby, E. H., Tolstoy's Answer to the Riddle of Life, 151.
Cynic's, The, Revised Wisdom, 339.

Dead Out of Doors, 423.
Debility, Extreme, Best Remedy for, 249.
Digestion, Gastric, Chloride of Sodium in, Linassier, 439.
Diseases, Epidemic Infectious, Controlling Influence of Environment in, McLaughlin, 294.
Diseases, Infectious and Contagious, Bell, 289.
Diseases, the Prevention of, Some Discoveries for, Smith, 239.
Disinfecting Apparatus, A New, 309.
Dog, Mad, 452.
Drunkards, Dispensaries for, Rubakoff, 441.
Drunkenness, Popular Remedies for, in Russia, Demitch, 442.
Dwarfs, Two, Brother and Sister, Poncet, 47.

Eddy, Atmospheric, An, Hallock, 201.
Eddy's, Mrs., Logic, 475.
Edinburgh and London, Street Dirt in, 167.

Education and the Elimination of Crime, 236.
Education and the World's Work of To-Day, Woodward, 97.
Energy, Conservation of, in Those of Advanced Years, 287.
Epidemics, International Prevention of, 501.
Epidemics, Prevention of, Cooper, 124.
Epileptiform Convulsions, Seat of, Samaja, 49, 249.
Examination of Candidates for United States Public Health and Marine Hospital Service, 273.
Exodin, a New Purgative, Ebstein, 254.

Female Education and the Birth Rate, "An Alumna," 544.
Fireproofing Test a Success, 448.
Fireproofing Wood, 535.
Flick, L. F., House Infection of Tuberculosis, 412.
Fog-Demon, the, Knell of, 53.
Food Inspection, Importance of, as a Sanitary Measure, Le Hardy, 113.
Function, The, of Selection, 381.

Galalith, or Milk Stone Manufactures, Hughes, 44.
Gas, Illuminating, in Public Sanitation, Lastchenkoff, 51.
Go Not Too Far, Coates, 94.
Guinea-Pig, the, Attempt to Render, Anti-Tuberculous, Levy, 48.

Hallock, C., An Atmospheric Eddy, 201.
Harris, S., Other Sources of Typhoid Infection than Through the Medium of Drinking Water, 310.
Health Inspectors, 353.
Helenin and Its Therapeutic Applications, De Korab, 349.
Helenin in Emphysema, Marey, 349.
Hoffman, F. L., The Statistical Laws of Tuberculosis, 396.
Holt, L. E., Milk, 13.
Hughes, O. J. D., Galalith, or Milk Stone Manufactures, 44.
Huret, J., Equal to the Occasion, 221.
Hurty, J. N., The Maryland Tuberculosis Exposition, 385.
Hygiene in the State of New York, 222.

India, Sanitation in, 168.
International Prevention of Epidemics, 496.
Iroquois Theater Fire, The, 175.
Isthmus, the, Sanitary Conditions of, 269.

Jefferson's Embargo, Harvey, 93.
Johnson, F. S. S., Butter Making in Canada, 41.

Kidneys, the, Measure of the Physiological Activity of, Grehant, 349.
King, W. A., Improvement of Registration of Vital Statistics, 537.

Kitchen, the, Of Interest in, 384.
Knott, J., Brain Fag, and Its Effects on Health, 108.

La Grippe, The Cough Sequela of, McCarty, 256.
Le Hardy, J. C., A Reminiscence of Yellow Fever, 113; Importance of Food Inspection as a Sanitary Measure, 113.
Life and Limb, To Save, 61.
Life, Waste of, in the State of New York, by Parsimony, 455.
Living, The Joy of, French, 93.
London, Health of, 271.
Long Island, The Climate of, Ross, 193.

"Maple Syrup," 530.
McLaughlin, J. W., Controlling Influence of Environment in Epidemic Infectious Diseases, 294.
Market Hygiene, Thoughts on, Bashore, 243.
Marmoreck, Le Serum de, Dieulafoy, 158.
Mazatlan, Sewerage and Drainage of, 467.
Medical Excerpt, Corbally, 46, 156, 249, 348, 437.
Memorial Hospital, Richmond, Va., 92.
Methods and Interpretation of Water Analysis, A. Robin, 481.
Milk, Purification of, by Ozonization, 352.
Milk—Report upon the Results of the Different Kinds of Pure and Impure Milk in Infant Feeding in Tenement Houses and Institutions of New York City, Holt and Park, 13.
Mood, the, Changed, 322.
Mortality and Morbidity Reports and Reviews, 65, 170, 258, 358, 453, 520.
Mosquitoes, Warfare on, 60.
Mount Sinai Hospital, The New, a Model of Sanitary Science, 356.

Navy Medical Corps, the, Changes in the Personnel of, 70.
Navy, the, Health of, 65.
Nephritis, Chronic, Dietetic Treatment of, Vaughn, 215.
Neurasthenia, Rankin, 507.
New York City's New Health Commissioner, Dr. Thomas Darlington, 171.
New York City's Streets, Problem of Keeping, Clean, Woodbury, 140.
New York City, Vital Statistics of, 1903, 360.
New York at World's Fair, 479.
New York, the State of, Hygiene in, 222.

OBITUARY:
Julia Ann (Hamlin) Bell, 258.
Cyrus Edson, M.D., 260.
Robert Wood Mitchell, M.D., 84.
Moreau Morris, M.D., 358.
Thompson, Sir Henry, Bart., 520.

Occasion, the, Equal to, Huret, 221.
Oppenheimer Institute, Annual Meeting, 272.
"Orange Blossom Honey," 530.
Osler, W., The Home in Its Relation to the Tuberculosis Problem, 323.
Our Homes and Ourselves, Bell, 3.

Panama Canal—Problem of Sanitation, 474.
Panama, Isthmus of, the, Sanitary Conditions and Diseases Common to, Shiffert, 120.
Park, W. H., Milk, 13.
Parsifal, 94.
Patents, Sanitary, Recent, 56, 161, 375, 443.
PERSONAL:
Thomas Darlington, M.D., 171.
W. O. B. Wingate, M.D., 373.
Physical Ideal, the, Steps in Attaining, Frazee, 146.
Plague, Bubonic, in Peru and Mauritius, 466.
Plague Prevention by Vaccination, 169.
Pneumonia, Prevention of, 245.
Poisoning of English Beer and Food, United States Consul Smyth, 515.
Potato, the, The Use of, 52.
Pregnancy, Density of the Blood During the Last Months of, Bar, 440.
Preparing Clams for Food Purposes, Richard Guenther, 514.
Preservatives, Alleged Injurious Effects of, in American Meats and Dried Fruits in Germany, Hanauer, 308.
Proctor's Theaters, 95, 192, 288, 384, 550.

Radio-Active Substances, The Continuous Emission of Light and Heat by, 476.
Radiographies of the Tubercular Ganglions, Bouchard, 156.
Radiotherapy, Epithelioma Cured by, Huret, 348.
Rankin, Gunther, M.D., Wear and Tear of Life—Neurasthenia, 592.
Relative Prevalence of Contagious Diseases in Children of School Age, P. H. Bryce, 497.
Remittent Fever in India Caused by a New Piroplasme, 159.
Removed the Germs, 534.
Robin, A., M.D., Methods and Interpretation of Water Analysis, 481.
Roentgen Rays, Action of, on Animal Tissues, Lepine, 348.
Ross, W. H., The Climate of Long Island, 193.

Salicylic Acid Harmful, 169.
San Francisco's New Board of Health, 361.
SANITARIAN, THE, Appreciation of, T. P. Corbally, 556.

SANITARIAN, THE, Delay and Deficiency of the March Issue, 258.
SANITARIAN, THE, Merged with The Popular Science Monthly, 568.
Sanitary Baking Houses, 534.
Sanitary Laws, Texas, 246.
Sanitation of India, 168.
Scab? What is a, 191.
Schmid, H. E., School Hygiene and the Need of Medical Supervision in All Our Schools, 227.
School Hygiene and the Need of Medical Supervision in All Our Schools, 227.
Servetus, Monument to, 64.
Sewage, Distribution of, on Bacteria Beds, 54.
Sewerage and Drainage of Mazatlan, 467.
Shiffert, H. O., Sanitary Conditions and Diseases Common to the Isthmus of Panama, 120.
Ship, An Unsinkable, 165.
Ship, Why is a, Called "She"? 64.
Sinus, Frontal, the, Suppuration in, Luc, 251.
Smith, W. R., Some Discoveries for the Prevention of Disease, 239.
Smyth, United States Consul, Poisoning of English Beer and Foods, 515.
Soap, 447.
Soil, the, Sanitary Relations of, Bashore, 42.
Soul, The, Electricity Transformed, 477.
Spitting Nuisance, The, 354.
Studying Yellow Fever in South America, 534.
Success, 55.
Suicide, 467.
Superuncontradistinguishabilitiveness, 550.

Telling Fortunes, 45.
Tenderloin, the, Real Life Drama in, 446.
Tenement-House Enlargements in Boston, 166.
Tenement Houses, New York City, Commissioner's Report, 58.
Tetanus, Sub-Acute, Blin, 50.
Texas Sanitary Law, 246.
Theater Fires, 340.
Tibbles, W., Prevention of Tuberculosis, 202.
Timepieces, The Old, and How to Care for Them, 436.
To-Day, Brackett, 258.
Tolstoy's Answer to the Riddle of Life, Crosby, 151.
Trail, the, Trouble on, 189.
Truss Frame, The Pomeroy, 256.
Tuberculines, Marmoreck, 156.
Tuberculosis, Carbonic Acid Treatment of, Weber, 351.
Tuberculosis, Curability of, Vaughn, 352.
Tuberculosis, Decrease of Mortality from, in Germany, 467.
Tuberculosis Exposition, The Maryland, Hurty, 385.

Tuberculosis Hospital to be Built Among the Pines, 450.
Tuberculosis, House Infection of, Flick, 412.
Tuberculosis in England, 270.
Tuberculosis, Prevention of, Tibbles, 202.
Tuberculosis Problem, the, The Home in Its Relation to, Osler, 323.
Tuberculosis Seaside Plan, 355.
Tuberculosis, The Statistical Laws of, Hoffman, 396.
Tuberculosis, To Fight, 355.
Typhoid Fever, Committee on, 264.
Typhoid Fever Epidemic, The, in Butler, Pa., 82.
Typhoid Infection, Other Sources of, than Through the Medium of Drinking Water, Harris, 310.
Typhoid Record, Unenviable, Pittsburg's, 267.

Universal Exposition at St. Louis—Section on Hygiene, 551.
Unrest, Brackett, 347.
Urotropin in the Prophylaxis of Scarlatinal Nephritis, Widowitz, 160.

Vaccination Law Upheld, 61.
Vaudeville, 478.
Virginia Hot Springs, Dr. Guy Hinsdale, Medical Advisor, 170.

Warner, B., Some Problems of a Great City, 424.
Water, Drinking, in the Army, Vallin, 50.
Water, Purifying, with Ozone, 53.
Water Supplies, Illinois, 263.
Water Supplies, Protection of, Cartwright, 303.
Water Supply, Additional, for the City of New York, 135.
Wear and Tear of Life—Neurasthenia, Rankin, 502.
Wind-Call, A, Tabb, 383.
Women, New Vocation for, 168.
Women Pioneers, Great, 477.
Women, Successful, of America, Northrop, 189.
Woodbury, J. McG., Problem of Keeping New York City's Streets Clean, 140.
Woodward, R. S., Education and the World's Work To-day, 97.
Wound of the Liver and Right Femoral Artery, Leguen, 158.
Wounds, Sluggish, Healing, Bleck, 250.

Yellow Fever, A Reminiscence of, Le Hardy, 113.

75 95.

2 gal
~54 +